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REPORT OF THE HOUSE COMMITTEE ON STATE AFFAIRS
63rd Legislature

What Mass Transportation Means to Texas:

**Legislative or Other State Assistance
Needs for Resolution of Transportation Goals.**

**The Institute of Urban Studies
The University of Texas at Arlington
1975**

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The Institute of Urban Studies,
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1975



State Affairs Committee
House of Representatives
Austin, Texas

DAVID FINNEY
CHAIRMAN
P. O. BOX 2910
AUSTIN, TEXAS 78767

January, 1975

The Honorable Price Daniel, Jr.
Speaker, Texas House of Representatives
63rd Legislature

Dear Mr. Speaker:

Pursuant to your letter of September 25, 1974, authorizing the House Committee on State Affairs to conduct an interim study of State policies with regard to the efficient administration of a mass transit program, I have compiled such a study with the cooperation of the Institute of Urban Studies, The University of Texas at Arlington.

As Chairman of the House State Affairs Committee during the 63rd Legislature, I herewith submit the final report of our findings, as required by the rules of the House.

Respectfully submitted,

David Finney
David Finney

WHAT MASS TRANSPORTATION MEANS TO TEXAS:
LEGISLATIVE OR OTHER STATE ASSISTANCE
NEEDS FOR RESOLUTION OF
TRANSPORTATION GOALS

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HIGHLIGHTS

By 1920 the United States had become a predominantly urban country.

By 1980, it is predicted that more than 70 percent of the nation's population will be living in metropolitan areas, compared to about two-thirds in 1970.

The primary motivation behind the rural to urban migration has been technology.

In the decade ending in 1970, Texas experienced a 16.9 percent population gain while the U.S. increased 13.3 percent.

Houston experienced a 40.1 percent increase in population since 1960, Dallas gained 39.5 percent, and Fort Worth gained 33 percent. The combined population of the four largest SMSA's is 46.1 percent.

The assumption that the major urban areas of the state do not maintain enough density for a mass transportation system can no longer be considered valid. It has been shown conclusively that mass transportation is a shaper of urban form. In other words, the density will develop naturally once the system has been installed.

The special activities and functions of the city plus the concentration of population within it makes for unique transportation needs. The city requires not only a different level of mobility but a different type of mobility.

Maintaining the economy of the cities is maintaining the economy of the state. Therefore, the state has the responsibility of assuring the special mobility needs of its urban residents.

Eight urban counties now provide nearly 60 percent of seven selected taxes to the state treasury and expenditures in these areas do not match the contribution. Eight counties are subsidizing the rest of the state.

Rapid rail construction costs are not significantly greater than new 6-lane expressway costs.

Rapid rail land acquisition costs are 1/3 of the land acquisition costs of a new 6-lane expressway.

Rapid rail and bus systems are much more energy efficient than automobiles.

Rapid rail and bus systems emit significantly less pollution than automobiles when computed on a per passenger mile basis.

The availability of funds for freeways and interstate access, not local needs, continues to dominate what is built. Plans for a more balanced system are being delayed or forestalled because of inadequate financial alternatives.

Public transit will not pay for itself out of the farebox. But, automobiles are highly subsidized too. Egress and access to freeways and main streets necessitate building for peak-hour traffic. Subsidy to automobile users also include:

- . Cost in assuring safety
- . Police and court costs
- . Costs in meeting EPA standards
- . Opportunity loss in scarce land use
- . Opportunity loss for those who cannot opt for the auto.

Ridership of public transportation will increase:

- (1) with improved facilities for comfort, speed, convenience, and personal savings to riders.
- (2) with disincentives for private vehicle usage such as parking fees, tolls, and other road pricing.
- (3) with a crisis situation such as no gasoline.

Article 1118x, Sec. 1, par. b, Texas Civil Statutes, "...motor vehicles...are generally powered by internal combustion engines that emit pollutants into the air, which emissions result in increasing dangers to the public health and welfare, including damage to and deterioration of property as well as harm to persons, and hazards to air and ground transportation."

The planning and development of a balanced multi-modal transportation system would increase job accessibility and create a multitude of new jobs which would result in lower welfare costs and a tremendous boost to our economy.

Per one hundred million miles traveled, approximately 5.3 auto fatalities occur, compared to .19 bus fatalities and .07 passenger train fatalities. (Reported in St. Louis Rapid Transit Feasibility Study, 1971)

Yearly costs of running automobiles, including gasoline, oil, repairs, license, insurance, interest and depreciation over a 3 year period amounts to

\$2400 - mid size car
2900 - full sized
1900 - sub-compacts

Imagine the savings for a family that is able to reduce their auto ownership by one.

Increased State funding is needed in the development of a multi-modal transportation system which would include rapid rail transit, buses on special lanes and in mixed traffic, mini-buses involved in a demand responsive program, and the automobile.

The main State funding source of unified work programs for the planning and development of public mass transportation systems is the State Highway Trust Fund, and the Highway Department's orientation predominates in these plans.

The State Highway Department has gone unchallenged in its construction and perpetuation of a uni-modal system which has laced the State with concrete and asphalt, led to increasing amounts of fuel consumption, increased traffic congestion and disrupted communities.

The municipalities of the State are in need of financial support for the development of their public transportation systems. The State must aid them financially in developing a system so critically needed.

SECTION I
INTRODUCTION

WHAT MASS TRANSPORTATION MEANS TO TEXAS:
LEGISLATIVE OR OTHER STATE ASSISTANCE
NEEDS FOR RESOLUTION OF
TRANSPORTATION GOALS

INTRODUCTION

In the past, public and mass transportation capital investments and transit operations have been considered entirely under the jurisdiction of the various cities. With the myriad of new expectations of cities, however, many are in real financial difficulty and cannot finance needed transportation. Also, many cities simply do not have the expertise to plan systems suitable to their citizens' needs. If this expertise does exist, local systems must mesh with the highway networks and county roads that lead to the cities.

Clearly then, the state has a responsibility to assist with both enabling legislation and leadership. Through default of the state, cities are turning to the federal government which is beginning to respond as evidenced by recent legislation for transit operating monies. If the state does not act now, urbanized areas will be forced to rely more heavily on national assistance. Even then, they will not be able to come up with necessary matching funds or adequate plans.

Just how critical is the need for mass transportation in Texas? What direction is the present state policy, or lack of policy, leading?

There must be input from all regions of the state to know that problems are common and which are peculiar to certain areas. To assess statewide public transportation needs it is necessary to know what transportation planning has been done and the criteria for the plans. To determine what state assistance is needed it is, likewise, important to know of problems encountered in implementing plans such as in transit management, marketing of public transportation, or specific financial difficulties.

The need for mass transportation is more acute in larger cities. Is this a reflection of their economic and social importance to their regions, the rural areas, and to the entire state? This study seeks to establish the relationship between rural and urban areas, investigates how and why they should cooperate in planning and implementing a more balanced state transportation network, and aims at establishing criteria for any needed state legislation.

If state advocacy is needed to help cities lacking expertise in technical matters and in obtaining grants for planning (especially the smaller cities and rural areas), are there state agencies and departments established for these purposes? Investigation is made as to whether the state must help cities finance public transportation, and if so, how?

Concentrating primarily on intra-city and intra-regional surface transportation and movement of people, one should not forget that movement of goods greatly influences where jobs are, where people live, and where people go in general. That transportation routing shapes population densities and growth is clearly borne out when the history of freight movement is reviewed. Thus, transportation not only has the function of assuring mobility, but of effecting efficient use of land.

Distinction Between Public Transportation and Mass Transportation

The Texas Mass Transportation Commission sees the total role of future transit systems in Texas as divided into four relatively distinct areas: public transportation, mass transportation, people-mover systems, and movement of goods.

Public Transportation. While admitting that the four areas cannot be completely separated, TMTC describes public transportation as serving a social need of the community aimed at the non-driver segment of the population.

This includes: persons too young, persons too old, the physically or mentally handicapped, families without cars, suspended drivers, and tourists and travelers. These are spoken of as "captive riders". It is well to note that in the neighborhoods of some cities this could amount to 30-50% of the population. For example, in Texarkana, Laredo, McAllen-Edinburg-Pharr areas, upwards from 20% of families do not own cars.

Continuing with TMTC's interpretation of public transportation as a social need,

Some patronage is expected from people who could provide transportation for themselves if public transportation were not available.* Their patronage should be encouraged as long as the fare more than covers the 'out-of-pocket' costs of providing service to them.¹

This concept is not agreed upon by all Texans and many are beginning to look upon transportation as a public service, like schools, and police and fire protection.

Mass Transportation. On the other hand, mass transportation, "...serves an economic need rather than the social need served by public transportation." The objective of mass transportation (as conceived by Texas Mass Transportation Commission) is to provide for the rapid movement of masses of people in order to serve peak travel requirements within major travel corridors where the use of private autos is prohibitive.

This study does not seek a definite distinction between "mass" and "public", and the terms need not suggest particular types of conveyances. Rather, "mass" only connotes movement of a greater number of people. There is strong support

*Referred to as "choice riders", because they choose to ride instead of using their own vehicle.

for the use of buses in Texas as being most feasible in many areas. The rationale is that they are more flexible; present streets, freeways, roads and highways can be utilized; and their use would, therefore, be faster to implement and would allow the most cost-efficient system. The other side of this story is investigated in this study to determine what is feasible to do now to meet goals of the future. Fixed rails, transitways, and many technological innovations are becoming not only feasible but essential in some areas. Consideration is given to them so that short-term nearsightedness will not prevent Texas from implementing long-term plans. Good, fast transportation lines as a "shaper" of population densities could serve not only an economic need, but meet the definition of public transportation's social need as well.

Mass transportation does not have to mean rapid rail, monorail, or subways, but if these are the answer for future population densities, congestion, pollution, and energy shortages, they must be considered now.* Whether labeled "public" or "mass", transit systems will not pay for themselves out of the farebox--at least not in the short-term. Whether publically owned, or private, they will require subsidy.

*The U.S. Department of Transportation is joining with the National Science Foundation and 32 other National Metropolitan areas in a search for new urban technology. Hoping that this combined financial clout will find answers to some of the problems, Houston, Dallas, and San Antonio have joined this group. See DOT News Release 83-74, dated October 14, 1974.

FOOTNOTES

¹The Role of the Texas Mass Transit Commission, Texas Transportation Institute, Texas A&M University, p. 12.

SECTION II

BACKGROUND

BACKGROUND

History of Priorities

The history of transportation in Texas parallels that of the U.S., each era reflecting the technology of the time and each decidedly one-dimensional. The need for diversification and a choice (balanced system), however, is evidenced early in Texas history. Galveston, situated ideally for water transportation, and with a charter older than Houston's, also needed the railroad to stay alive.* Before Houston became a port, the railroad northward to the Red River was desperately needed. Joining Dallas in the bid for canalization of the Trinity until she got her own canal and became a port city, Houston even today still seeks a more balanced system of transportation. All of this has to do with linkages, and freight rates - movement of goods and people.

Railroads. After the Civil War, more than 32 million acres of Texas public land were given away to promote railroad construction in the state. The federal government became a business partner in rail transportation with free grants and monetary loans (and even loans of Army Engineers in laying out and construction). It was not until the Interstate Commerce Act of 1886 that states and cities adversely affected by this priority were successful in getting any regulatory legislation to alleviate such a biased priority.

Railroad mileage in Texas reached a peak of 17,078 miles in 1932, but has declined by 3,000 miles since then. From the beginning it was within the

*The first 20 miles of railroad trackage was completed in Texas in August, 1853. The line was from Galveston to Stafford's Point.

purview of railroads to be movers of people as well as movers of freight. In 1891, freight revenue in Texas amounted to \$2,958 per mile; passenger revenue was \$1,081 per mile. Yet in 1971, freight revenue was \$47,143.77 per mile and passenger revenue had dwindled to \$38.81 per mile.

RATIO OF FREIGHT-TO-PASSENGER (REVENUE DOLLARS PER MILE)

1891 - 2.73:1

1971 - 1239.4:1

(Statistical History of Railroad Operations in Texas 1891-1971 - compiled by the Texas Railroad Commission and Texas Railroad Association)

With their criss-cross of networks and unsafe crossings, rails are now restraining the cities.* They no longer move folks. Unused rail rights-of-way are numerous, but sometimes abandonment, and urbanization, or present land use make these unfeasible for transit rights-of-way. Also, railroad companies are very reluctant to cooperate with transit planners, protecting their rights-of-way even when they are not being utilized.

Only 16 Texas cities have passenger service at the present time.¹

Roads and Highways. Until 1928, the federal government stayed out of the urban road business, the Federal-Aid Road Act of 1916 specifically excluding urban highway construction in any city with population of more than 2500. Federal road work was, thus, rural and interurban. But, after completion of the Cumberland Road in 1844, the states drove the federal government out of all road building until the depression era. Even though states

*This is a very big problem in San Antonio where there is a very high train-car accident rate. Since there are no regular routes or schedules for trains, people don't expect them at crossings. Feasibility study may be made to create a rail loop around San Antonio.

made road-building state and local business, they did little to help their cities with individual problems of finance. Cities have always had to finance building of their own streets and roads, as well as urban transit systems. The large mass transit systems in such cities as New York, Philadelphia, Baltimore, and Chicago were originally built on city credit. Others are privately owned and thus are harder for the cities to control.

At a time when the entire nation was suffering from money problems, road building for jobs and profit began with the 1932 Emergency Relief and Construction Act and highway construction in urban areas began to get outside assistance. Yet, the 1934 Hayden-Cartwright Act, with its absence of a plan for highway construction in the city, served to destroy and unbalance urban transportation systems already in existence.

World War II brought on real and projected priorities (national defense for one) of a national interstate highway system. Affluence and technology made it possible to spread cities out and even to build individual cities to accommodate and utilize only automotive transportation modes. With the Federal-Aid Highway Act of 1944, funds were included on a 50:50 matching basis to cities over 5,000 population who would spend the money for new highway construction: 33% for right-of-way; 25% to roads in urban areas. The affects of this priority setting were: (1) a national system, (2) temporary panacea for urban transportation, and (3) a one-dimensional approach.

Texas, like the rest of the nation, now needs to talk about transit between systems and between cities. Having made transportation private (rails and roads) all the way, Texans now need other options. The "temporary panacea" no longer works; cities can no longer cope with transportation needs that the automobile has helped to create. In the section entitled Federal Role, a gradual turnaround is seen and priorities are beginning to change.

FOOTNOTES

¹Passenger Travel Patterns and Mode Selection in Texas: An Evaluation.
Research Memo 5, October 1973, Council for Advanced Transportation Studies,
The University of Texas at Austin.

SECTION III

THE URBAN INFLUENCE

THE URBAN INFLUENCE

The patterns and nature of urban development in the United States are a product of the historical development of this country, its demographic trends, and changing demand structure for natural resources. Urban areas were first established along the eastern seacoast. Cities such as New York, Philadelphia, Baltimore, Charleston, and Boston were components of the export base of the United States economy during the nineteenth century.

In that period, cities were transshipment points through which the more developed metropolitan system of Western Europe exploited domestic natural resources of the United States and distributed manufactured products to the interior. Cities were designed to service the rural areas.

Later, technological developments in transportation permitted further expansion and the growth of new urban centers. The canal system facilitated transportation to other areas. The development of the steamboat created more efficient and economical uses of rivers and lake systems. The railroads aided a process of growth unparalleled in the United States, providing efficient transportation throughout the Midwest and Southwest, and later to the West.

The result of the ongoing processes of population growth, industrialization and declining rural opportunities was the urbanization of the nation. By 1920 the United States had become a predominantly urban country; 51.2 percent of its residents lived in urban places. The percentage of the total population living in rural areas declined through the nineteenth century and during the initial half of the twentieth. By 1960 the absolute number of rural inhabitants also had declined and rural population was urbanized in the existing 219 standard metropolitan areas.¹

By 1980, it is predicted that more than 70 percent of the nation's population will be living in metropolitan areas compared to about two-thirds in 1970.² The predominant factor influencing the growth of urban areas is population increase. Demographers predict, based on fertility rates, that the population of the U.S. will be between 255 and 300 million persons by 1990. By far the majority of this increase will be felt in urban areas.³

The Rationale for Urban Concentration

Before relating this urbanization trend to Texas, some rationale behind this development should be outlined. The primary motivation behind the rural to urban migration has been technology. Machines have revolutionized agriculture. It is no longer a labor intensive activity. This has released many to seek opportunity in the cities where the majority of economic activity is taking place. Thus urbanization has been spurred by the lack of opportunities in rural areas, by expanding opportunities in urban areas and by the likelihood of improving income and living conditions in the city. Thus, businesses and industries are electing in overwhelming numbers to locate in urban centers. The reasons behind this development are varied.

The economies obtained by businesses and industries centralizing in an urban area may be grouped into three major categories. These include the economies of scale, localization economies and urbanization economies.

The economies of scale refer to the fact that increasing industrial size under given circumstances will result in economies to a firm. These economies result in a falling unit cost over a given scale of operations. To attain the economies of scale, naturally the firm must increase its size if there is sufficient demand. To attain any larger scale of plant and operation there must be assimilation at a common point of a variety of productive factors such as labor, capital equipment, primary raw materials, transportation

facilities, and the like. For an industrial enterprise to take advantage of these economies, attempts are made to locate in close proximity to an urban area that provides accessibility to the desired factor inputs.

Localization economies refer to cost savings that accrue to very similar industries or competitive enterprises because of location or centralization at a common geographical point.

Urbanization economies refer to the benefits that accrue to a firm for which they do not have to pay. These external benefits are available to all firms within the urban region. These external economies exist in many facets of the urban-industrial interaction. The existence of common factors of production and public or social goods or services in the form of social overhead capital illustrates the concept.

The Texas Experience

Texas is at the forefront of population growth and the urbanization trend in the nation. Over the last twenty years Texas has experienced a faster rate of population growth than has the United States as a whole. From 1950 to 1960 the nation experienced a growth rate of 18.5 percent while the state experienced a growth rate of 24.2 percent. In the decade ending in 1970, Texas experienced a 16.9 percent gain while the U.S. increased 13.3 percent.

To clarify statistics that are to follow a few definitions are in order. The term Standard Metropolitan Statistical Area is the essence of statistics portraying urban populations. The U.S. Bureau of the Census defines the SMSA as a county or group of contiguous counties which contain a city (or twin cities) of over 50,000 inhabitants. The surrounding counties may be included if they are metropolitan in character and are integrated economically and socially with the central city.

Urban areas are designated by the Bureau of the Census as all population in both incorporated and unincorporated places of 2,500 or more, and also the unincorporated suburban populations of cities of 50,000 or more. Rural population is defined as those living on farms and those living in rural areas but not on farms, principally in incorporated and unincorporated towns and villages of less than 2,500.

There are currently 26 Standard Metropolitan Statistical Areas in Texas. Over 73 percent of the population resides in these areas. This demonstrates the fact that Texas can no longer be considered a state of rural people. Other statistics reinforce this statement. The combined population of the four largest SMSA's is 46.1 percent of the total state population.⁴ The areas are Houston, Dallas-Fort Worth, San Antonio and El Paso. These are prime centers for future mass transportation needs.

State-wide rural-urban statistics demonstrate the same trend. In 1970 the population of Texas was 11.2 million, 79 percent of which resided in urban areas. The average annual growth rate of the population since 1960 has been 1.5 percent. The Texas population in 1970 was 5.51 percent of the national population, slightly higher than the 5.34 percent of 1960.⁵

To explore the urban experience in Texas, a series of tables on each metropolitan area have been compiled. These twenty-eight tables were taken from a study called Principal Interaction Fields of Texas Metropolitan Centers published by the Bureau of Business Research in Austin. The primary, secondary, tertiary and quaternary levels represent the fields of urban interaction. The primary level is the metropolitan county for each area. Each consecutive level following the primary one depicts the level of urban influence by county or groups of counties. The counties represented by each level are listed in a section following the tables. Each area of the state is represented in the

table as being under the influence of an urban area. The secondary and tertiary levels are distinguished by the percentage of persons commuting to the metropolitan county. The percentages are categorized with 15-75 percent representing the secondary level while 5-14.9 percent signifies the tertiary level. The quaternary level was determined by newspaper circulation. Thus even rural areas that do not have significant numbers of persons commuting to the metropolitan county still depend upon the city for news. Not all areas sighted in the study fit the criteria for levels clarified herein. For these areas columns were left blank. (See Appendix B)

This method of displaying urban influence in Texas reveals clearly the flow of population to the cities. Throughout the state the overwhelming majority of metropolitan counties show gains in population from 1960 to 1970. Houston, for example, experienced a 40.1 percent increase over 1960 while Dallas gained 39.5 percent and Fort Worth gained 33 percent. Much of this increase has come from intra-state migration as rural people continue to flock to the cities. This is demonstrated by the tables. Many of the outlying areas, especially the quaternary and tertiary levels show heavy losses in population. This is particularly true of rural areas in west, east and south Texas.

Other factors delineated in the tables show characteristics of the urban areas. For example, throughout the state younger populations are located in the cities while generally the older populations are in the outlying rural counties. This reflects the relatively recent trend of urbanization. Population projections in the state indicate a continuation of this trend. Areas such as Wichita Falls and Waco which show losses in population from 1960 to 1970 are now projecting increases.

This growth in urban population is reflected by the fact that Texas has jumped from the sixth most populated state in 1960 to the fourth most populated

state in 1970. In contrast, rural areas in the state showed a decline of -16.7 percent from 1950 to 1960. From 1960 to 1970 that decline slowed somewhat at -4.9 percent. Though the trend has slowed, projections show clearly that it will continue. (See Table 8, Appendix A)

Of significance in the state is the concentration of population in several key areas. In 1973 the U.S. Bureau of Census combined the SMSA's of Dallas and Fort Worth to form one population census area. This move recognized the tremendous growth both cities have experienced. For all practical purposes they now form one metropolitan area. This metropolitan center is the 10th largest in the nation. The Houston metro area constitutes the 13th largest in the nation. The third largest urban center in the state is San Antonio which ranks 38th nationally.

Projections for 1990 reveal a population in Dallas county of nearly 2.5 million while Tarrant County is predicted to have well over one million persons. Thus Dallas-Fort Worth will continue to grow in prominence as a major urban center in the nation. Houston is also projected to continue its role in that regard. Projections for the major cities of the state clearly show a continuation of urbanization.

The concentrations of population in the cities signifies their economic importance. This is demonstrated by the tables which show cities as the economic lifelines of the state. The retail sales data depicts the metropolitan county as a retail center. Retail sales fall off markedly through the interaction levels as they progress through the rural counties. (See Appendix B)

The major attraction to the metropolitan centers in Texas is the multitude of employment opportunities. Between 1960 and 1968, employment in Texas increased from 3.2 to 4.1 million. During that eight-year period, employment increased in all major industry groups except agriculture and

mining. Employment in these two groups decreased both in number employed and in proportion of total employment. This reflects the declining opportunities in the rural areas. Employment in the services sectors increased from 22 to 26 percent of total employment between 1960 and 1968, while employment in the manufacturing sectors increased from 15.5 to 17.8 percent of total employment during the same period.⁶ The tables on each of the metropolitan areas show large numbers of people commuting from the surrounding counties to the metropolitan county. It should also be noted that large numbers commute from suburbs within the metropolitan county to the central city for employment. Thus there is a heavy dependence not only on the metropolitan county but also on the central city.

The concentration of population and employment within the city in Texas portrays the urban centers as a source of concentrated financial power. The twenty largest banks in Texas are all located in major urban centers. (See Table 5, Appendix A) This financial concentration has many implications for the state. One is that most municipal bonds throughout the state are held by these major banks. Thus, city government especially in the small towns is dependent on the financial strength of the major cities.

Another indicator of economic activity in the state is industrial expansion data. Data outlined in the new and expanding plant tables show that the majority of expansion in the state is occurring in the Standard Metropolitan Statistical Areas. In 1971 64.3 percent of all new plants in the state were built in the SMSA's. In that same year 64.8 percent of all industrial expansions was in the SMSA's. In 1974 the contrast is becoming even more significant. In 1974 from January to June, 70.7 percent of all new plants were built in the SMSA's. Expansions comprised 76.8 percent of the total. (See Table 6 and 7, Appendix A)

It is significant to note that the cities are also the health facility centers of their respective areas. Houston is known worldwide for its excellence in medical expertise, especially in the realm of heart transplants. Throughout Texas, the urban centers provide the specialized expertise in medicine without which the rural areas would suffer.

Cities are assets to Texas as centers for cultural activities. This is evidenced by the fact that all of the symphony orchestras, opera companies and ballets are located in the major urban centers. (See Table)

Tax Study

In 1972, two students from the Institute of Urban Studies at the University of Texas at Arlington, performed a study entitled the "Characteristics of State Revenue and Expenditure Policies in Texas with Respect to Urban and Non-Urban Areas". The study focused on seven sources of state revenue (ad valorem tax, limited sales tax, cigarette and tobacco tax, alcoholic beverage tax, motor vehicle sales tax, motor fuels tax, and motor vehicle registration fees) and two sources of expenditures (education and transportation) between the years of 1963 and 1970. The study focused on the contributions which eight urban counties and eight randomly selected counties from the rest of the state made to the states from the seven sources of revenue. It then compared the appropriations in two areas which the state returned to the counties.

The report concluded that "the eight most populous urban counties represent a valuable revenue asset for the State of Texas." Quoting from the report, "On this 3.13% of the State's land live 51.4% of its people. These counties generated 57% of the seven taxes considered." Using this same methodology, this report was updated to 1972, and revealed that the

percentage these eight urban counties have contributed to State revenues for the seven taxes has increased to 59.3%. Table 6, the Ad Valorem Tax Comparison, reveals that while the percentage change in state receipts from 1970 had decreased 3.8%, the eight urban counties' contributions had risen 2.2%. The contributions of the rest of the State had decreased 8.4%. The percentage of the State's total ad valorem tax receipts received from the eight urban counties had risen from 42.7% to 45.4%. (See Appendix C)

In the comparison of the Limited Sales Tax Data, Table 7, it was found that the eight urban counties provided 64.3% of the total which the state received. Even though this represents only a 0.2% increase from 1970, it accounts for \$568.3 million of the total \$883.6 million total. (See Appendix C)

Motor Vehicle Sales Tax Data in Table 8 reveals that the eight urban counties in 1972 contributed 57.2% to the total receipts of the State - up from 54.9% of total receipts in 1970. This represented an increase of 81% over the amount the same eight counties collected in 1970. The rest of the State's contributions grew at a rate of 64%. (See Appendix C)

Cigarette and Tobacco and Alcoholic Beverage Taxes, Table 11, also increased with the eight urban counties contributing 59.1% of the totals of these taxes. This reflects an increase of 2.3% of the State total for the urbanized counties. (See Appendix C)

The Motor Vehicle Registration Fees, Table 9, showed a slight decrease in the percentage of the State total for the urban counties - from 58.1% in 1970 to 57.5% in 1972. This is still above half of the total fees received and is not a significant reduction in the percentage of fees collected.

The urban areas continue to provide over half of the total revenue received from the seven taxes. Per capita tax burden is much higher in the urban counties than in the rest of the State. Table 14 gives the amount the State appropriated for construction and maintenance of roads and highways in the eight urban counties. Only 26.7% of total expenditures were in the eight counties which accounted for 50.7% of the Motor Fuels Tax, the primary source of revenue for the Highway Department. (See Appendix C)

As the original study concluded, it remains obvious that far from being a burden to the State, the urban areas are actually providing the revenues essential to keep the State of Texas financially sound. The urban areas should be receiving appropriations in accordance with their contribution to state revenues. The Highway figures suggest that the urban areas are financing rural roads while they continue to accumulate far more vehicle miles traveled than other areas. It is time for the State to recognize its responsibility to the urban areas. Additional funds must be diverted to urban systems in order that they may remain viable and continue to be a major asset of the State of Texas.

Conclusions

Judging from the concentrations of population, the economic activity, the health specialization, the cultural activities, and the revenue generating capability within, cities are obviously valuable assets to the state. In fact the future destiny of the state will largely be determined in the city.

The importance of a transportation system to the city cannot be overstated. Concern is being expressed throughout the state over current problems relating to this heretofore city responsibility. The resources

and attention of the state may be focused upon this problem in the future. The idea that the major urban areas of the state do not maintain enough density for a mass transportation system can no longer be considered valid. It has been shown conclusively that mass transportation is a shaper of urban form. In other words, the density will develop naturally once the system has been installed. Examples of this can be seen in cities like Toronto, Canada. If we choose to wait until there is enough density, the system may never be built. We may create urban monsters similar to Los Angeles where the average commuter mile traveled per day is 74 miles. Action must be taken now to develop a viable transportation system for our Texas cities.

FOOTNOTES

¹William L. Henderson and Larry C. Ledebur, Urban Economics, Processes and Problems (New York: John Wiley and Sons, Inc., 1972), p. 16.

²National Planning Association, Center for Economic Projections, Economic Projections to 1980: Growth Patterns for the Coming Decade (Report No. 70-R-2, December, 1970).

³Henderson and Ledebur, op. cit., p. 18.

⁴Walter E. Mullendore, Author L. Elkhalm and Paul M. Hayashi, An Input-Output Model of the North Central Texas Region (Austin: Office of the Governor, 1972).

⁵Herbert W. Gribb, The Structure of the Texas Economy, Input-Output Analysis (Austin: Office of the Governor, 1973).

⁶Ibid.

SECTION IV

COSTS OF TRANSPORTATION SYSTEMS

COSTS OF TRANSPORTATION SYSTEMS

The enormous costs of constructing rapid rail systems is often cited as the reason that more effort has not been expended in building a rail system. Table 1, lists the cost of land and construction for different transportation systems. Land costs in the central business district for rapid rail range up to \$2.22 million per mile compared with up to \$2.95 million per mile for busway and up to \$6.66 million per mile for a new construction six-lane expressway. More land is required for a system designed for non-fixed guideway vehicles in order to move large volumes of traffic. Nancy W. Sheldon and Robert Brandwein in The Economic and Social Impact of Investments in Public Transit (page 47) state that each mile of six lane urban freeway will require from 11 to 34 acres of urban land. Rapid rail systems can require as little as 4 acres per mile of railway. In addition, large quantities of land are required for feeder lanes and parking for vehicles utilizing an expressway system. In addition to right-of-way acquisition being higher for expressway construction much more land is consumed, forcing the cost of future right-of-way acquisition even higher.

When construction costs are computed for the same items above the costs of rapid rail per mile at grade reach \$9.4 million per mile, the costs of busways reach \$3.30 million dollars per mile at grade, and the construction costs of a new construction six-lane expressway per mile can be as high as \$7.44 million dollars per mile in the central business district. As can be determined from these data, the costs at grade are not tremendously greater for rapid rail than for expressways.

Rapid rail would have additional costs added for station construction and rolling stock acquisition. Costs also rise rapidly for elevated rail systems and systems where cut and cover construction is utilized. However, the rail system utilizes less land which must be locked in with pavement, leaving more land for open spaces or future metropolitan development. The added benefits of less fuel consumption and less pollutants emitted will further reduce the gap in costs, although no data have been developed to illustrate this.

Operating costs comparisons are made in Table 2 which illustrates that, on a cents per passenger mile for operating costs basis, rapid rail and bus systems compare favorably with the cost per passenger mile incurred by automobile users. The costs of operating motor vehicles are incurred by the owner and will continue to rise as fuel prices increase. The cost of operating motor vehicles also does not include taxes, insurance, parking, or tolls which will drive the cost per passenger mile even higher.

The density of population has also been a deterrent for urban areas to enter the public transportation business. The density of population will change as public transportation systems are implemented to provide a level of service which is desirable to attract ridership. Mass transit systems will be able to deliver a larger number of people to a certified area at a cost not enormously greater than a highway system. It will also deliver the same number of people at less fuel consumed per passenger mile and less pollutants emitted per passenger mile. Time savings can be enjoyed by public transit riders who will not be stalled in rush-hour vehicular traffic.

Systems which provide full service to the CBD will be more attractive to downtown shoppers who will be able to get downtown without worrying about what to do with the automobile.

The employment centers downtown will be open to a larger number of people who would not be able to obtain transportation to jobs. A system providing adequate egress and ingress out of and into the central city would provide employment opportunities in the suburbs for those who were previously locked in the center city because of the inability to get to suburban areas where many of the new jobs are created.

A well functioning transit system would create a more efficient metropolitan area if people and goods were moved with fewer delays. The transit system, as a shaper of urban growth, would attract development along the rights-of-way. Population density would increase around the system, improving revenues versus costs problems. The entire urban area would also benefit from less fuel consumption, less pollution, and lower personal expense from traveling in the urban area.

TABLE 1
TRANSPORTATION SYSTEM COSTS

	Rapid Rail \$ Million Per Mile	Busway \$ Million Per Mile	Freeway \$ Million Per Lane Mile	Arterial \$ Million Per Lane Mile
Land Costs				
CBD	.72-2.22	.96-2.95		
New Roads			.36-1.11	.32-.75
Reconstruction			.36- .72	.29-.49
Major Widening			.32- .64	.17-.27
Fringe	.72-1.44	.96-1.92		
New Roads			.36-1.04	.11-.19
Reconstruction			.19- .36	.09-.14
Major Widening			.16- .26	.07-.11
Residential	.64-1.28	.85-1.70		
New Roads			.28-.51	.16-.54
Reconstruction			.14-.34	.16-.32
Major Widening			.04-.30	.09-.26
Construction Costs				
At Grade	6.6-9.4			
Elevated	13.2-18.6			
Cut and Cover	35.8-71.4			
Downtown	16.3-31.6			
			\$4650/ Lane Mile for Maintenance Per Annum	\$1750/ Lane Mile for Maintenance Per Annum
Station				
Subway (each)	10.0-17.0			
At Grade/Elevated (each)	2.0-5.0			
At Grade				
Center City		2.77-3.30		
Fringe		1.89-3.19		
		1.65-2.23		
CBD				
New Road			1.04-1.24	.33-.56
Reconstruction			1.12-1.26	.33-.49
Major Widening			1.08-1.48	.33-.55

TABLE 1 -- Continued

	Rapid Rail \$ Million Per Mile	Busway \$ Million Per Mile	Freeway \$ Million Per Lane Mile	Arterial \$ Million Per Lane Mile
Fringe				
New Road			.71-1.20	.29-.46
Reconstruction			.62-.71	.30-.39
Major Widening			.51-.68	.31-.45
Residential				
New Road			.62-.84	.26-.38
Reconstruction			.51-.68	.28-.33
Major Widening			.62-.98	.31-.45

TABLE 2

TRANSPORTATION SYSTEM OPERATING COSTS
(Cents Per Mile)

	Rapid Rail		Busway		Expressway		Arterial	
	Per Car Mile	Per Pass. Mile	Per Car Mile	Per Pass. Mile	Per Car Mile	Per Pass. Mile	Per Car Mile	Per Pass. Mile
OPERATING COSTS	101-279	2.88-7.97	44-235	1.76-9.4				
60MPH					12.74	5.79		
55					11.88	5.4		
50					11.27	5.12		
45					10.66	4.84		
40					10.23	4.65		
35					9.92	4.51	17.03	7.74
30					9.68	4.4	16.17	7.35
25					9.56	4.34	15.99	7.27
20							15.44	7.02
15							14.58	6.63

NOTE: Assumed 50% capacity for transit vehicles and 2.2 passengers per automobile.

SECTION V

POLLUTION

POLLUTION

The Environmental Protection Agency has promulgated primary and secondary ambient air quality standards and requires states to submit plans for implementing the ambient air standards in each of the air quality control regions (AQCR's) in the state. The plans submitted by the State of Texas were disapproved by the EPA and plans were promulgated by the EPA for the State of Texas. The case is still in litigation with the final result yet to be determined.

Volume 38 Number 213 of the Federal Register reviews the plans for Texas. The EPA has determined that the presence in the ambient air of three of the pollutants for which control strategies are required is largely attributable to the automobile. These are carbon monoxide, hydrocarbons, and photochemical oxidants. In 1970 gasoline vehicles produced 65.2% of all carbon monoxide emitted, 47.8% of all hydrocarbons emitted, and 34.4% of all oxides of nitrogen emitted (see Table 2).

Utilizing this information the EPA has concluded that alternative transportation modes be implemented into the total transportation system.

Quoting from the Federal Register Volume 38 Number 213:

"In many areas with mobile source pollution problems, the air quality standards can be achieved by only a shift from our present reliance on the automobile to a more balanced reliance of all forms of public and private transit. In a number of these areas, emission controls on motor vehicles alone will never be adequate." (30628)

"...in several urban areas a shift from our present reliance on automobiles occupied by one or two persons to a greater reliance on other forms of transit is essential to the achievement of the air quality standards." (30628)

"A clear implication of these air plans is that future augmentation of mass transit must focus not only on the

center city streets, but also on urban/suburban routes."
(30629)

One of the EPA's major goals in bringing air quality up to the national standards is the reduction in vehicle miles traveled (VMT). Reduction in VMT means one thing - reducing automobile traffic in metropolitan areas. The simplest method is car-pooling. However, with the situation of the world energy supply, a combination of an energy efficiency and pollution efficient mode of transportation is desirable.

A comparison of transportation mode pollution emissions, Table 1, reveals that at the present time the larger public transit vehicles emit much less pollutants than the automobile. The raw data of grams per car mile of three pollutants - carbon monoxide, hydrocarbons, and oxides of nitrogen - were published in the U.S. Department of Transportation manual Characteristics of Urban Transportation Systems. Fifty percent capacity on public transportation vehicles was assumed and 2.2 persons per private automobile was assumed. The raw data of grams per car mile of pollutants emitted were converted to grams per passenger mile of pollutants emitted by dividing the raw data by the assumed loading for each vehicle. The electric rapid rail was by far the most pollution free of the various modes. The grams per passenger mile was less than the 1990 estimates for automobiles which would be fitted with emission control devices.

The costs of pollution are difficult to measure. Experience in some urban areas has shown air pollution to cause damage to buildings, people's health, and resulted in increased costs for cleaning. Even if the energy supply problem could be alleviated, the costs of air pollution would be reason to justify substantial reduction of private automobile usage.

The State of Texas can expect some measures to be adjudicated which would reduce private vehicular traffic in urban areas. Plans should be

formulated now to provide alternative transportation which would replace the reduction in vehicular miles traveled without disruption of the transportation system.

TABLE 1: TRANSPORTATION MODE POLLUTION EMISSIONS

	Carbon Monoxide		Hydrocarbons		Oxides of Nitrogen	
	Grams	Mile	Grams	Mile	Grams	Mile
	Per Car Mile	Per Pass. Mile ⁽³⁾	Per Car Mile	Per Pass. Mile ⁽³⁾	Per Car Mile	Per Pass. Mile ⁽³⁾
RAPID RAIL (Electric) (1)	0.2219	0.0063	0.1243	0.0035	12.0696	0.3448
COMMUTER RAIL DIESEL (2)	30.8	0.8800	22.0	0.6286	33.0	0.9428
BUS						
Residential Collection/ Distribution						
Jitney-5 passengers	68.95	27.58	9.53	3.81	4.54	1.82
Bus-Wagon-8 passengers	94.46	23.62	13.06	3.26	6.22	1.56
Minibus-19 passengers	119.97	13.33	16.58	1.84	7.90	0.88
Normal Bus-50 passengers	10.90	0.44	14.70	0.59	13.84	0.55
Line Haul (Normal Bus Only)						
Surface Arterial	10.90	0.44	14.70	0.59	13.84	0.55
Exclusive Busway	10.54	0.42	11.69	0.47	8.53	0.34
CBD Collection/Distribution						
Normal Bus only	10.90	0.44	14.70	0.59	13.84	0.55
AUTOMOBILES 1972						
On Freeways						
60.0 mph	30.89	14.04	6.08	2.76	7.39	3.36
55.0 mph	31.66	14.39	6.30	2.86	6.85	3.11
50.0 mph	32.93	14.97	6.58	2.99	6.44	2.93
45.0 mph	33.92	15.42	6.71	3.05	6.26	2.84
40.0 mph	37.24	16.93	7.07	3.21	5.85	2.66
35.0 mph	40.96	18.62	7.62	3.46	5.72	2.60
30.0 mph	47.17	21.44	8.16	3.71	5.44	2.47
25.0 mph	55.47	25.21	8.75	3.98	5.13	2.33
On Arterial Streets						
30.0 mph	46.81	21.33	7.80	3.54	5.35	2.43
25.0 mph	56.01	25.46	8.48	3.85	5.17	2.35
20.0 mph	68.95	31.34	9.53	4.33	4.54	2.06
15.0 mph	83.60	38.0	10.61	4.82	4.58	2.08
AUTOMOBILES 1990						
On Freeways						
60.0 mph	7.35	3.34	0.95	0.43	1.81	0.82
55.0 mph	7.53	3.42	1.00	0.45	1.77	0.80
50.0 mph	7.62	3.46	1.02	0.46	1.72	0.78
45.0 mph	7.94	3.61	1.09	0.50	1.61	0.73
40.0 mph	8.44	3.84	1.18	0.54	1.52	0.69

TABLE 1: TRANSPORTATION MODE POLLUTION EMISSIONS--Continued

	Carbon Monoxide		Hydrocarbons		Oxides of Nitrogen	
	Grams	Mile	Grams	Mile	Grams	Mile
	Per Car Mile	Per Pass. Mile ⁽³⁾	Per Car Mile	Per Pass. Mile ⁽³⁾	Per Car Mile	Per Pass. Mile ⁽³⁾
AUTOMOBILES 1990						
On Freeways						
35.0 mph	9.34	4.24	1.27	0.58	1.45	0.66
30.0 mph	10.43	4.74	1.36	0.62	1.36	0.62
25.0 mph	12.56	5.71	1.59	0.72	1.29	0.59
On Arterial Streets						
30.0 mph	10.66	4.84	1.37	0.62	1.39	0.63
25.0 mph	12.79	5.81	1.56	0.71	1.31	0.60
20.0 mph	15.88	7.23	1.81	0.82	1.22	0.55
15.0 mph	19.78	8.99	2.06	0.94	1.21	0.55

(1)

Assumes single car operation, 5.3 kilowatt-hours per car-mile, 5% sulfur content for oil, and 10% ash content for coal.

(2)

Data are based on weighting factors applied to actual tests conducted at various load and idle conditions with an average gross vehicle weight of 30 tons, fuel consumption of about 5.0 miles per gallon, and an average sulfur content of 0.50%.

(3)

Assumed 50% capacity for transit vehicles and 2.2 persons per automobile.

TABLE 2: Summary of Nationwide Emission Estimates, 1970 (10^3 tons/year)

	SO _x	%	PART	%	CO	%	HC	%	NO _x	%
Gasoline Vehicles	200	.59	300	1.2	95,800	6.52	16,000	47.8	7800	34.4
Diesel Vehicles	100	.29	100	.39	800	.54	100	.29	1300	5.7
Railroads	124	.36	47	.18	100	.07	93	.27	142	.63
Vessels	297	.88	51	.20	1,700	1.2	317	.91	162	.71
Aircraft	100	.29	49	.19	3,000	2.0	420	1.2	364	1.6
Other Nonhighway Use	163	.48	108	.42	9,500	6.5	2,000	5.8	1920	8.4
Total Transportation	984	2.9	655	2.6	111,000	75.5	19,500	56.2	11700	51.5
TOTAL	33,900		26,600		147,000		34,700		22,700	

SOURCE: Nationwide Air Pollutant Emission Trends 1940-1970. U.S. EPA, January 1973.

SECTION VI
ENERGY CRUNCH

ENERGY CRUNCH

The United States is presently consuming approximately seventeen million barrels of oil per day, of which, seven million or over one-third, is imported. The national policy will be aimed at reducing this amount by six million barrels per day. This will be approximately a one-third decrease in the amount of petroleum products available and the conservation of energy sources will be a major goal.

The oil embargo from the Middle East in the winter of 1973-74 indicates the degree of sacrifice which will be required in order to reduce petroleum usage in the United States. The supplies from the Middle East should be considered unstable and subject to curtailment at any time. According to the National Petroleum Council's Committee on U.S. Energy Outlook, Table 1, present motor gasoline demand in the United States is approximately 38% of total petroleum demand. At the present time, this approximately equals the quantity of petroleum imported into the United States. A one-third reduction in motor gasoline would severely limit automobile vehicle miles traveled.

The concept of energy efficiency of transportation is directly related to the amount of fuel used per unit of transportation. Fuel consumption per vehicle mile for various modes of transportation are given in Characteristics of Urban Transportation Systems, compiled by the United States Department of Transportation.. Since different modes use different fuels, the data were converted into BTU's (British Thermal Units) per vehicle mile. Fifty percent capacity was assumed for public transportation vehicles and 2.2 persons were assumed to occupy each personal automobile. The BTU's consumed per vehicle mile were then divided by the assumed loads to yield BTU's consumed per

passenger mile. These data are reproduced in Table 2.

Examination of Table 2 reveals that, generally, the greater carrying capacity of the vehicle, the greater the transportation efficiency. There is some overlap in the efficiency of the automobile, the smaller buses, and electric rapid rail when the electricity is produced by a coal-powered generator. Overall, the mass transit vehicles are far superior to the automobile in energy efficiency. The smaller buses, although about equal to the automobile in efficiency with the assumed load, would probably carry a higher percentage of capacity, thus increasing their efficiency.

As the developing nations increase their consumption of energy, the price may be driven higher due to increasing demand and increasing difficulty in extracting the primary sources of energy. Increased fuel costs will force part of the population out of the transportation market unless suitable public transportation is available. Although increased fuel costs will result in fuel conservation, the major reductions at the individual level will be at the lower end of the socio-economic scale. Transportation alternatives should be made available to meet the needs of those who cannot afford private transportation and those who choose not to use it.

TABLE 1: Motor Gasoline Demand 1965-1985 (MB/D)

	1965	% of Total	1970	% of Total	1975	% of Total	1980	% of Total	1985	% of Total
Motor Gasoline Demand	4.593	39.8	5.785	39.3	6.950	37.9	8.2	36.7	9.2	35.4
Total Petroleum Demand	11.523		14.722		18.346		22.329		25.977	

SOURCE: Energy and Local Government, Cinda Martin Calderon and David W. MacKenna, Institute of Urban Studies, University of Texas at Arlington, Arlington, Texas, September 1974, p. 10.

TABLE 2: TRANSPORTATION MODE, FUEL CONSUMPTION

ITEM	Fuel Consumption Per Vehicle Mile	BTU Per Vehicle Mile	BTU Per Passenger Mile ⁽¹⁾
RAPID RAIL (Electrical Energy Source) (8)			
Coal	3.65-8.20 lbs	47,450- 106,000	1356-3046
No. 6 Diesel Fuel	0.33-0.37 gal	49,500-55,500	1414-1586
Diesel	0.35-0.39 gal	50,750-56,550	1450-1616
Gasoline	0.38-0.44 gal	50,700-57,200	1448-1634
Furnace Oil	0.36-0.40 gal	50-400-56,000	1440-1600
Kerosene	0.37-0.44 gal	49,210-58,520	1406-1672
Natural Gas	42.00-53.00 cu. ft.	46,200-58,300	1320-1666
Manufactured Gas	80.00-132.00 cu. ft.	44,000-72,600	1257-2074
BUS			
<u>Residential Collection and Distribution</u>			
Jitney-5 passengers	0.083 gal	12,090	4836
Bus Wagon-8 passengers	0.111 gal	14,430	3608
Minibus-19 passengers	0.154 gal	20,020	2224
Normal Bus-50 passengers	0.193 gal	27,985 ⁽⁴⁾	1119
<u>Line Haul</u>			
Surface Arterial-Normal Bus	0.167 gal	24,215 ⁽⁵⁾	968
Exclusive Busway-Normal Bus	0.123 gal	17,835 ⁽⁶⁾	713
<u>CBD Collection and Distribution</u>			
Normal Bus	0.251 gal	36,395 ⁽⁷⁾	1456
AUTOMOBILE (2,3)			
<u>On Freeways</u>			
65.0 mph	0.07377 gal	9590	4359
60.0 mph	0.06734 gal	8754	3979
55.0 mph	0.06228 gal	8096	3680
50.0 mph	0.05871 gal	7632	3469
45.0 mph	0.05580 gal	7254	3297
40.0 mph	0.05507 gal	7159	3254
35.0 mph	0.05220 gal	6786	3084
30.0 mph	0.5254 gal	6830	3105
25.0 mph	0.05411 gal	7034	3197

TABLE 2: TRANSPORTATION MODE, FUEL CONSUMPTION--Continued

ITEM	Fuel Consumption Per Vehicle Mile	BTU Per Vehicle Mile	BTU Per Passenger Mile ⁽¹⁾
<u>On Arterial Streets</u>			
40.0 mph	0.07998 gal	10.397	4726
35.0 mph	0.07970 gal	10,361	4710
30.0 mph	0.08054 gal	10,470	4759
25.0 mph	0.07993 gal	10,391	4723
20.0 mph	0.07742 gal	10,065	4575
15.0 mph	0.07842 gal	10,195	4634

(1)

Assumes 50% capacity for rapid rail and buses and 2.2 persons per automobile.

(2)

Based on vehicle mix of 66% standard and 34% compact automobiles.

(3)

Based on typical roadway segments which reflect various curves, grades, stops per mile, traffic densities, etc.

(4)

Assumes average speed of 15 mph.

(5)

Assumes average speed of 25 mph.

(6)

Assumes average speed of 45 mph.

(7)

Assumes average speed of 10 mph. Normal bus is only vehicle used for CBD collection and distribution.

(8)

Average consumption for rail transit systems is about 5.3 kilowatt-hours per vehicle-mile based on a single car operation.

SECTION VII

SOCIO-ECONOMIC ASPECTS OF PUBLIC TRANSPORTATION

SOCIO-ECONOMIC ASPECTS OF PUBLIC TRANSPORTATION

Intra-City Transportation -- Background

The present intra-city transportation system basically consists of privately owned autos and a moderate to low level of public bus service, both operating on streets and highways. This system offers some segments of our society a high degree of mobility at the expense of others. Those not served include: the elderly, the youth, the handicapped, the racial minorities, and the poor. In denying these people the degree of mobility experienced by the rest of society, there remains large pools of human resources which if tapped could increase the level of productivity at a time when it is sorely needed. Improved public transportation systems could increase the level of job accessibility and at the same time create a multitude of new jobs. This would have a tremendous effect in lowering the welfare rolls in our country. Improved systems would also increase the level of social access for the youth and the elderly, groups which have limited access to social activities, medical facilities and shopping centers.

These groups pay for the present transportation system more than the rest of society because it does not provide them with mobility and accessibility but must still contend with adverse environmental effects, possible community disruption from road and highway construction, and unfair placement in our competitive economic system.

These groups, however, are not the only ones hurt by transportation system. Businesses and middle class families are adversely affected by increasing costs of fuel, the cost of a second car, time costs in the transportation of goods, increased safety hazards due to the ever-increasing

congestion on the streets and highways, and increased levels of environmental pollution. An alternative transportation mode needs to be developed to eliminate these problems and still insure a high level of mobility.

The Elderly

The elderly in our society have special needs in regards to transportation that are not being met. Such factors as perceptual motor changes, reduced income, inability to get operators license, lack of self-confidence, and concern of relatives for the elderly member of the family, prohibit the elderly person from fully participating in the private transportation system. Social activities, shopping and medical trips comprise the major needs of the elderly and today's public transportation system does not allow the flexibility and safety necessary.

The present route structures of most public transit systems, along with varying time schedules, make their use difficult for the elderly who have little need of a system that travels on corridors from the central business district to the suburbs. In the North Central Texas Region, particularly Dallas and Tarrant Counties and neighboring areas, a trip destination survey showed that 84% of all trips were home-based, non-work and non-home based trips and that these trips are spread throughout the day.¹ Cross-town commuting typifies their strongest needs and could be served excellently by a demand responsive system. This type of service would eliminate the hardships of getting to bus stops, waiting long periods, and keeping track of transit schedules which are not always easily accessible or easy to read and understand.

An interesting insight into the elderly's transportation needs and their relation to income was presented in a study entitled: The Unmet Needs of the Aging in Tarrant County.²

In the four regions of the county on which the study focused, the region with the highest percent of elderly with below-poverty-level incomes also had the highest percent of persons experiencing transportation problems. As shown in Table A, a close comparison exists among percentages with incomes below the poverty level, percentages not owning an automobile, and percentages experiencing problems with transportation costs. Eliminating the differences due to income, it is evident from Table A that a large number of the aging are suffering from unmet needs in transportation which call for specialized programs.

TABLE A

Incomes Below Poverty Level and Aging Experiencing Various Transportation Problems by Region in Tarrant County (Shown in Percents)*

	Region 1	Region 2	Region 3	Region 4
Income below poverty level	59.4	34.3	26.4	28.9
Not owning automobile	53.6	39.7	33.8	27.6
Experiencing Transportation Problems	44.3	40.6	23.1	20.7
Experiencing Problems of Transportation Costs	31.7	17.9	6.4	17.5
Who do not depend on others	20.6	17.9	5.4	9.5
Experiencing Problems of Health/Mobility	29.0	19.6	7.9	16.7
Replying bus routes not suitable	11.1	5.1	4.0	4.0

*Data taken from The Unmet Needs of Aging in Tarrant County, 1974, Tables, Institute of Urban Studies, Urban and Regional Affairs Division, 1974.

The Youth

The young people in the country also have transportation needs which are not met by today's system. This group includes not only those who are too young to drive a car, but also those who are old enough to drive a car but cannot afford one. Those who are too young to drive often must rely on their parents to take them to school, a social activity, or a friend's house. The multiplication of trips to and from different places not only places a financial burden on parents but also a time burden. If the child is not fortunate enough to have parents that own enough cars to meet his needs, he must rely on the existing transit system or tremendously reduce his social activities. Walking or bicycling have become prohibitive in many cases due to long distances and unsafe conditions.

The young who do have drivers licenses are still faced with the high costs of purchasing and operating an auto, including exorbitant insurance costs. Inability to meet these costs restrict many from going to sporting, school, and other social activities and possible employment. In a study done of transit riders in the city of Houston, it was shown that a total of 15.5% in the Houston S.M.S.A. were between the ages of 16-24 and yet they made up 35.1% of the total transit riders.³ The report states: "The age distribution shows a large reliance on buses by the young, age 16-24, relative to the S.M.S.A. age distribution."⁴ It was also stated that the large percentage of these groups have mostly non CBD destinations and their account for much of the cross-town commuting. At the same time the elimination of the dependence on an automobile could decrease significantly the financial burden on college students and at the same time reduce the ever-growing demand for more parking spaces.

The Handicapped

In 1969, over six million were physically handicapped and a report in that year predicted a 40% increase over the next 15 years in the number of handicapped persons.⁵ This group faces many of the same problems of the previous groups in that they have limited, and in many cases, no access to private transportation and at present, public transportation is not constructed and planned to meet their needs. They still, however, have a strong demand for the journey to work and for trips to social functions, shopping centers and medical facilities.

A study done by Abt. Associates reveals that even if only the handicapped located in SMSA were to benefit from a specialized transit program, such as program implemented throughout the nation could return 189,000 people to work. Assuming that these persons were paid at the same levels as before their disability, a total yearly economic benefits in excess of \$824 million would be realized.⁶ Changes in transit equipment would include wide doorways which operated in a manner so as to provide easy access to the disabled, better planning of interior design so as to increase space and limit crowding, and improved braking and accelerating systems so as to provide a smoother ride.

The Non-Whites

This group contends with the same problems in our present transit system as the other groups, but has a stronger need in areas of job accessibility than the rest. To the non-white, whose income has been traditionally lower than his white counterpart, the purchase of a good quality automobile that is mechanically sound is next to impossible. Those automobiles that he is forced to buy may not be able to withstand the

stop-start driving of the city or the pressures of highway travel. In a study of automobile conditions in Watts, it was shown that twenty percent were not in a condition for safe expressway driving.⁷ Fuel consumption in these cars is at a high level and considering today's fuel costs this makes driving an auto prohibitive by low income families. Increased maintenance and insurance costs would again hurt these people and decrease their mobility and job accessibility.

It needs to be shown at this point that our present system also isolates these people from the rest of the community through highway construction. Highways often have cut through the middle of nonwhite communities or have bordered these communities, resulting in either community disruption or isolation. It may be true that most residents were paid the "fair market value" for their homes that were lost. The question arises; who set the value of these homes? Certainly not the residents. But it is not only those who are forced to move who took a loss but also those who were not forced to move and soon found their homes bordered by six and eight lane freeways. If they tried and were able to sell their homes, which were losing value daily, they were later to see the value of their land skyrocket under proper zoning and under the aid of huge amounts of capital investments.

Long waiting periods due to infrequent bus service, fixed routes that cater to suburban residents working in the CBD, and the disproportionate financing of transit systems by these captive riders are a few of the problems in today's system.

Transit service, especially in the off-peak hours, becomes so infrequent as to create 30 to 45 minute waiting periods at uncomfortable bus stops, most without places to sit and rest. Fixed route systems which go

from white residential suburbs to the central business district do not serve the need for cross-town commuting and reverse commuting. Although the greatest concentration of jobs is in the downtown area, the greatest number of jobs, especially in the semi-skilled and unskilled sector, are in the suburbs. According to a study done in 1971, the percentage of jobs located in the downtown area range from a high of 28 and 29 percent in New York and Philadelphia to a low of 14 percent in Chicago.⁸ This results in a low of 71 percent and a high of 86 percent of jobs in the suburban regions. Finally, in many cases, the transit systems depend on farebox revenues, and if a particular route does not appear profitable, it is quickly dropped. These routes that are dropped due to low ridership may be serving the people that need help the most. It would seem that these "less profitable" areas could best be served by demand responsive systems which act as feeder lines to major transit routes. The "need" for high density population areas concerning transit service is at best a useless argument. Different types of transit service should be provided for different population concentrations, with all types of service interconnected.

The Poor

This class of persons pervades throughout our previous groups and encompasses many of their problems. Being poor is not limited to any one of the above mentioned groups, and the poor persons' transportation problems are the same as the elderly, the youth, the nonwhites and the handicapped.

Safety, Environment, Cost, and Fuel Consumption Evaluation

It might seem that public transportation only serves the disadvantaged groups in our society, however, nothing could be further from the truth. Those who are financially and physically able to participate in our present

transportation system are also facing detrimental effects both now and in the future.

Adverse effects in our automobile transportation system include environmental pollution (air, solid waste, water, and noise), safety hazards, increasing costs in maintenance of the system and diminishing fuel supplies.

Focusing for the moment on automobile safety, it can be shown that automobile travel is one of the most dangerous modes of movement. In a House subcommittee report in 1971, it was stated that approximately 55,000 people are killed annually in highway and automobile accidents, averaging 150 persons killed each day.⁹ In another study done in St. Louis, it was reported that per one hundred million miles traveled, approximately 5.3 automobile fatalities occur, compared to .19 bus fatalities and .07 passenger train fatalities.¹⁰ In 1970, approximately two million people were injured seriously in auto accidents.¹¹

Environmental pollution, including air, water, land and noise have reached intolerable levels. According to Article 1118x of our State Civil Statutes, the legislature found that "...motor vehicles.... are generally powered by internal combustion engines that emit pollutants into the air, which emissions result in increasing dangers to the public health and welfare, including damage to and deterioration of property as well as harm to persons, and hazards to air and ground transportation."¹² Increased noise levels during peak traffic periods shortens the tolerance level of drivers and increases the chances for accidents. Solid waste pollution clutters our environment in the form of auto junk yards which litter our countryside.

Increasing costs of auto transportation come in the form of increased fuel costs, maintenance and repair costs and increased insurance costs.

For example, in 1974, automobile insurance rates in Texas increased at an average 9 percent. Since the winter of 1973-74, when our nation suffered its first fuel crisis since World War II, fuel costs have been constantly on the rise and these costs promise to stay at present and possibly higher levels. It was reported that last year the price of a barrel of oil on world markets was less than \$2.00. Today it is approximately \$10.00.¹³

Fuel shortages hurt in more ways than just the increasing costs. In the near future, we may be limited to the amount of fuel available at any cost. At current rates of consumption, proven U.S. oil and gas reserves are good for only about ten years.¹⁴ The U.S. Secretary of the State declares that "the United States would set as a target for the next decade the reduction of its oil imports to no more than one million barrels per day."¹⁵ Today the United States imports approximately 7 million barrels per day.

Under a tight fuel allocation program, priority will be given to agriculture and home heating fuels. Fuel for transportation will have to be used wisely and today's automobiles are not as energy efficient as public transportation vehicles.

Inter-City Transportation

The social problems of today's intra-city transportation systems are varied, but also there exists a need for mass transit systems for inter-city travel, to connect the major urban centers and to join rural and urban areas of the state. The economic interdependence of the rural and urban areas is an evident situation which must be realized. State Traffic Flow Maps indicate inter-city travel routes which could support mass transit. Such routes include the triangle from Dallas-Fort Worth; Houston-Galveston; and San Antonio. These mass transit systems would provide greater economic

and social access between urban and rural areas, reduce fuel consumption and lower the level of environmental pollution. Through the development of a rapid rail system that consisted of new and modern equipment, ridership would increase to fill the supply, the same as it did to fill our present highway system. An example of increasing ridership is the Amtrak passenger train, whose ridership increased 10% in the month of October 1974 and carried 23% more passengers in the first ten months of 1974 than in the same period of 1973.¹⁶ This increase in rail transit ridership has come in spite of adverse conditions in the Amtrak system such as derailments, long delays, power failures, often discourteous service, and slow travel speed.¹⁷

The need for a total public transportation system including rapid rail transit, buses in special bus lanes, buses in mixed traffic, minibuses to be used for a demand responsive system, and the automobile is needed in the State of Texas. The socio-economic benefits derived from such a total system would easily offset the costs involved in planning, construction, and maintenance. These benefits include: greater job accessibility, better utilization of human resources for a higher level of productivity; a lower rate of unemployment by redirecting our resources and energy towards construction, operation, and maintenance of this system; a lower level of welfare costs, and higher tax receipts by the state through increased spending on the part of the citizens; a lower level of environmental pollution and energy consumption; and finally, greater social interaction among relative and friends.

FOOTNOTES

¹"The Total Transportation Plan for the North Central Texas Region for 1990", Draft Copy, Regional Transportation Policy Advisory Committee, North Central Texas Council of Governments, November 1974, p. 16.

²The Unmet Needs of the Aging in Tarrant County, Institute of Urban Studies, Urban and Regional Affairs Division, University of Texas at Arlington, 1974.

³Alan M. Vorhees and Associates, Transit Customer Profile in the City of Houston, November, 1971, p. 23.

⁴Ibid., p. 22.

⁵Abt Associates, Travel Barriers: Transportation.

⁶Ibid.

⁷Sheldon and Brandwein, The Economic and Social Impacts of Investments in Public Transportation, Lexington, Mass., 1973, p. 8.

⁸Martin Wohl, "Current Mass Transit Proposals: Answer to Our Commuter Problem?" Civil Engineering-ASCE, December 1971, p. 70.

⁹U.S. Congress, House Subcommittee of the Committee on Appropriations, Hearings of Department of Transportation and Related Agencies Appropriations for 1972, 91st Congress, 1st Session, 1971, Part III, p. 222.

¹⁰Parsons, Brincherhoff, Tudor, Betchel, Sverdrup, and Parcel, St. Louis Metropolitan Area; Rapid Transit Feasibility Study, Long-Range Program, PB 204-060, St. Louis, August 1971, p. 90.

¹¹Sheldon and Brandwein, op. cit., p. 24.

¹²Vernon's Annotated Civil Statutes, Article 1118x, Vol. 2a, p. 211.

¹³"Energy Crisis Threatening to Set Off Worldwide Depression," Fort Worth Star-Telegram, December 9, 1974, Sec. A, p. 11.

¹⁴Ibid.

¹⁵Ibid.

¹⁶"Amtrak Reports Riders Up 10 Pct. During October," Fort Worth Star-Telegram, December 5, 1974.

¹⁷Passenger Travel Patterns and Mode Selection In Texas: An Evaluation, "Amtrak in Texas: An Appraisal" Council for Advanced Transportation Studies, October 1973, p. 11.

SECTION VIII
THE FEDERAL ROLE

THE FEDERAL ROLE

As can be seen from the history of transportation priorities up to 1944 presented in Section II of this report, the federal role in assisting cities with public transportation was grossly underplayed up to that time. The 1944 Act only provided funds to cities for new highway construction -- and then, only 25 percent of the cost to build roads in urban areas. This was the beginning of the one-dimensional motor vehicle system (which is not a system, but a network). Most of the legislation in the 1950's encouraged highway growth, but the 1958 Transportation Act complicated the process by making it easier for railroads to discontinue passenger service.

The following tabulation shows the federal role in financing transportation, the legislative acts which enable it, source of funds, and where the money can be used. As can be seen, there is a gradual change in national policies toward a more balanced, comprehensive approach and allocation of some funds for mass transportation to cities themselves.

The Federal Role in Financing Transportation

LEGISLATION	SOURCE OF FUNDS AND USE STIPULATION	AMOUNT
1956 Highway Act	<u>Rates of User Tax</u>	H
Highway Trust Fund	6¢/gal. gasoline	I
	10¢/lb. Tire & Tube Rubber	G
	5¢/lb. retread rubber	H
	\$3/1,000 lb/yr-heavy vehicle	W
	6¢/gal lubricating oil	A
	5% of mfg. sale price of truck	Y
	& bus parts & access. sales; CONSTRUCTION	
	10% of mfg. sales-bus & trailer	A
		C
		T
		I
		V
		I
		T
		I
		E
		S
		@ \$6 billion (per year)

LEGISLATION	SOURCE OF FUNDS AND STIPULATIONS	AMOUNT
1961 Housing Act	General Revenue-Income Tax, excise tax, investments, etc.	
	a. Urban Planning Assistance-technical assistance to state and local for planning, studies & publication of findings. (COORDINATION OF PROGRAMS)	
	b. Demonstration Grants-2/3 matching. No long-term capital improvements.	\$25 million (total)
	c. Loan Program-Low interest; for acquisition, construction, reconstruction of Mass Transit. Facilities & equipment-private or publically owned. (COMPREHENSIVE PLAN MUST EXIST OR BE IN PREPARATION)	\$50 million (total)
	(only \$47.5 million was appropriated by Congress for b and c above)	
1962 Federal-Aid Highway Act	"Development" of transportation systems embracing various modes of transport and no highway projects could be funded unless the planning process was comprehensive, continuing and coordinated.*	
1964 Urban Mass Transportation Act	a. Federal Financial Assistance - Could be used for capital improvements: purchase of land, buses, rail cars, signal equipment and other items. NOTE: CONTRAST THE 2/3 FEDERAL SHARE TO THE 90/10 MATCHING FOR HIGHWAYS. TO ACHIEVE A BALANCED SYSTEM, CITIES STILL HAD TO CHIP IN ALMOST 30% OF THE FUNDS.	\$375 million +\$75 million next two years (to improve existing systems)
	b. Long-Range Program (2/3 MATCHING; 1/3 IF NO COMPREHENSIVE PLAN)	
	c. Emergency Program	

*Planning for a transportation system is one thing; providing money is something quite different, and until 1964, the federal government's contribution was a mere token. The 1961 Housing Act provided a meager \$25 million for demonstration projects, but the major deficiency of the act was failure to provide long-term capital improvements.

LEGISLATION	SOURCE OF FUNDS AND STIPULATIONS	AMOUNT
	d. Research and Development, and Development Projects (mass transit systems that will not contribute to air pollution)	
	e. Relocation Requirements and Payments	
	f. Additional Grants for	
	(1) Unified urban transportation system planning	
	(2) Managerial training	
	(3) Higher education research	
		\$10 billion (over 12-yr. period for bus and sub-way systems)
1966 Amendment to Mass Transportation Act	Additional funding for studies and for training. Provision authorizing fund for technical studies for planning, designing and engineering of urban mass transit projects.	
1968 Highway Act	Provided for public hearings to consider economic, social, and environmental and design implications of proposed highway plans and alternatives. Liberalized replacement housing and established Highway Beautification Commission	
	. Set aside funds for Economic Growth Center Development Highways. Federal government share in these areas upped to 95% of costs. (Rural areas)	
1970 Airport & Airways Dev./ Revenue Act	User taxes on aviation fuels, air freight, and passenger tickets. For long-range planning and airport systems plan for urbanized areas grants.	\$500 million per yr. for 5 years
1970 Urban Mass Transportation Assistance Act	Planning grants for long-range projects; aid to public systems for capital improvements	\$3.1 billion over 5 yrs. \$10 billion 12 yr. period
1970 Rail Passenger Service Act	Created the National Rail Passenger Service Corporation to provide optimum passenger service over a basic route structure determined by Sec. of Transportation.	

LEGISLATION	SOURCE OF FUNDS AND STIPULATIONS	AMOUNT
1970 Federal-Aid Highway Act	A continuation of highways, but also provided funds in certain improvements to city streets.	
1973 Federal-Aid Highway Act	<ul style="list-style-type: none"> . Permits mass transit projects to be constructed as elements of Fed-Aid Urban Systems . Metropolitan Planning Organizations (MPO's) must be designated--new highway planning funds allocated directly to them. . Establish "Urban Systems", working with state plan. . UMTA capital grants increased. . Increased UMTA funds for the elderly and handicapped. . Demonstration highway public transportation projects in RURAL areas (buses, facilities, shelters, etc.) (\$20 million from Highway Trust Fund) . Public Transportation Studies (including possible revenue mechanisms) 	<p>\$3.1 billion (additional)</p> <p>Federal share increased to 80%</p> <p>(\$30 million)</p>
1974 National Mass Transportation Assistance Act		\$11.8 billion (total)
(signed Nov. 26, 1974 by President Ford)	<ul style="list-style-type: none"> . Capitol improvements (cities can decide whether rail or bus) . Capitol improvements, or, OPERATING EXPENSE 	<p>\$7.8 billion</p> <p>\$4 billion</p>

The National League of Cities Congressional Report CR93-2-39, dated November 22, 1974, interprets the 1974 Act as follows:

The bill establishes a program of formula matching 50/50 grants for operating assistance providing:

\$300 million for FY 1975	\$775 million for FY 1978
\$500 million for FY 1976	\$850 million for FY 1979
\$600 million for FY 1977	\$900 million for FY 1980

The formula distributes the operating assistance funds among urbanized areas as defined by the U.S. Bureau of Census based on (a) 50 percent relative population and (b) 50 percent density of population. In urbanized areas of 200,000 or more population, the Governor, responsible local officials, and the officials of public transportation authorities shall designate a recipient to receive and disburse funds for the area. Where such agencies exist, statewide or regional transit authorities or instrumentalities would be the designated recipient.

In urbanized areas of less than 200,000 population, the Governor shall disburse the funds based on continuing cooperative and comprehensive transportation planning process covering all modes of transportation and conducted by the States and the governing bodies of the communities in the area. Local projects may be submitted to the Department of Transportation and the Governor who would have 30 days for comment on such local projects. The bill:

- .requires recipients of operating assistance to charge elderly and handicapped riders not more than 1/2 fare in off-peak periods;
- .allows the conversion of up to 1/2 of the discretionary capital grants to operating assistance with provision for repayment to capital projects;
- .provides a \$40 million authorization for a free fare demonstration project; and
- .reserves a \$500 million of the capital grant funds for a rural mass transit program for non-urbanized areas.

The measure increases capital-grant contract authority in the Mass Transportation Act of 1964 from \$6.1 billion to \$10.925 billion. Capital grant matching program remains 80/20. (\$4.825 in new contract authority with \$3 billion in remaining contract authority authorized by the Highway Act of 1973 for a total of \$7 billion for the six years).

According to information obtained from the Regional Urban Mass Transportation Administration office in Fort Worth, twenty-eight cities in Texas will share approximately \$184.5 million of the funds which this new act authorizes.

However, it will probably be several months before federal regulations regarding the spending are available to cities. Annotated copies of the act were sent to Governors in early December, but one section of the Act, especially, needs clarification, that which says a regional plan must be coordinated with a state transportation plan in order for a city to receive additional funding.

Texas, like all states, faces the problem of meeting federal guidelines to receive federal assistance. Texas has no department analogous to the U.S. Department of Transportation, nor does she have an Urban Mass Transportation Administration, but even with such established arrangements problems exist in obtaining the needed cooperation and comprehensive planning. The following explains what UMTA does.

Urban Mass Transportation Administration (UMTA)

The Department of Transportation is an "umbrella", cabinet-level organization and is comprised of a group of classically competitive entities including the Federal Highway Administration, Urban Mass Transportation, and the Federal Railroad Administration. Urban Mass Transportation Administration (UMTA) was, until 1968, in the Department of Housing and Urban Development.

There are six programs which UMTA can participate in:

1. Capital Grants (goes to communities) to buy buses, facilities, land, shelters.
2. Technical Studies (goes to public agencies) - A Unified Work Program serves the basis for the areas to send in for a planning grant (See paragraphs below)
3. Research and Development (goes to companies) - state-of-the art activities
4. University Grants (research studies, etc.)
5. Management Training (transit operation management)
6. Demonstration Programs

Unified Work Programs and Metropolitan Planning Organizations. One

requirement for federal mass transportation funds to be transferred to a local area is a Unified Work Program, which is updated yearly. In Texas, all SMSA's are now working with UMTA to gain federal dollars, and there is a possibility that there will be 50 planning grants.¹ The planning process is tied to Section 134 of the 1973 Federal-Aid Highway Act, and new funds, as authorized in Section 112, go to Metropolitan Planning Organizations (MPOs) of the various regions. The Governor, responsible local officials, and the officials of public transportation authorities designate the MPO's, which may be a Council of Governments, Regional Planning Office, or the major city of a region. The following explains the purpose of a Unified Work Program.

All forms of transportation are interrelated and, although each serves a specific need, they must interface properly to provide a coordinated transportation system. Planning for a coordinated transportation system is a part of the comprehensive planning process for an urban area or region.

Basic planning estimates, such as land use, population, and economics, are used for all planning; and the need for unified estimates and projections of these variables is necessary to eliminate inconsistencies and duplication of effort.²

This process, though very logical and essential, is not an easy task to accomplish. Cutting across many political jurisdictions at times and involving the Highway Department, transit companies, railroads, airports, and all sorts of land users and personal interests, agreements are difficult to come by. Grants can be lost if people cannot "get their heads together." The Intermodal Planning Group (IPG), composed of the Highway Department, Federal Aviation, UMTA, EPA, Coast Guard and others on an ad hoc basis, review the the Unified Work Plans.

The Texas Mass Transportation Commission has made an inventory of plans in Texas and a "Master Plan" is in the process of being printed. This is essentially an after-the-fact compilation of transportation plans of cities

over 50,000 population and is one of the first steps necessary if Texas is ever to have a coordinated and balanced statewide transportation system.

Other Federal Assistance

Certain funds come to the state as pass-through money for specific purposes. HEW, HUD, DOL and other federal agencies have programs which include transportation for specific clientele such as the aging (HEW), rural (DOT demonstration projects), poor, and underemployed (DOL). The new Housing and Community Development Act, for instance, says money can be used for transportation where cities have been turned down by the Department of Transportation and other agencies. These possible sources of funds should certainly be investigated for areas needing specific programs. The Heart of Texas Council of Governments at Waco, for instance, has a special department set up just to handle transportation for the elderly. They have a contract with the City of Waco Bus System and are funded through the Governor's Committee on Aging. Five vans for the rural elderly have also been secured.

Revenue Sharing. In a recent speech in Fort Worth to the Texas Municipal League and later to the League of Cities in Houston, Mayor Bradley of Los Angeles urged all attendees to communicate with their Congressmen to urge continuation of revenue sharing. The General Revenue Sharing program which began in 1972 will be discontinued in 1976 unless the 94th Congress authorizes its extension.

Revenue Sharing may be spent by local governments for any capital expenditures authorized by local law or for operating and maintenance costs that fall into any of eight "priority expenditure" categories (including public safety, environmental protection, public transportation, and financial administration). It cannot, however, be used as matching money for other federal assistance.

While general revenue sharing funds represent less than the normal yearly increase in a city's spending, several Texas cities report having used this money to keep their city buses in operation.

With recent raises in city employee wages, we would not have had money for buses without revenue sharing. Property tax will not support the bus operation. Next year a \$1.3 million subsidy will be required.³

Similar remarks have been voiced by San Antonio and other cities.

It has been said that the federal government has the money, state government the authority, and city government the problems. There seems to be little doubt that the federal role has had a tremendous impact on what has been developed up to the present. Cities and states have found it difficult to accept federal dollars for specific transportation uses, but even more difficult to turn them down.

The state's role, as discussed below, points up the fact that a more positive position could be taken that would enhance localities' ability to individualize their transportation.

FOOTNOTES

¹Interview with Blas Eurebie, Urban Mass Transportation Administration, in Dallas, October 15, 1974.

²Unified Work Program for Regional Transportation Planning, September 1974-August 1975. South East Texas Regional Planning Commission (Wilbur Smith & Associates, consultants.)

³Interview with personnel at City of Fort Worth Traffic Engineering Department, October 23, 1974.

SECTION IX

THE STATE AND LOCAL ROLE

THE STATE AND LOCAL ROLE

For many years, transportation in Texas has been planned by different agencies on different governmental levels. Creation of the Texas Mass Transportation Commission in 1969 brought to five the number of agencies involved in this field. These included the Texas Mass Transportation Commission, the Texas Aeronautics Commission, the Texas Highway Commission, the Texas Railroad Commission and the Texas Department of Public Safety. It was not until March 24, 1971 that an attempt was made to coordinate planning by the creation of the Interagency Transportation Planning Council. This interagency council was charged with advising the Governor and Legislature on transportation matters and policies, helping to resolve problems of each of the transportation agencies, and coordinating transportation planning among members of the council, regional and local governments.¹

For the purposes of this report, discussion will be focused on two of the five agencies named above: the Texas Mass Transportation Commission and the Texas Highway Commission.

The Texas Mass Transportation Commission is charged with assisting in the development of mass transportation (both intercity and intracity) encouraging the development of rapid transit systems, recommending needed legislation, assisting local governments in obtaining federal public transit grants, and accepting federal or other grants for acquiring, constructing or operating public transportation facilities. It may also render financial assistance in the planning of public mass transportation systems out of appropriations made by the Legislature for that purpose. For Fiscal Year 1971, this Commission was only appropriated the sum of \$78,500 and proposals for FY 1972

ranged from \$40,800-\$41,160. These appropriations were hardly adequate for the commission to energetically fulfill its duties.

The Texas Highway Commission which consists of three Commissioners and the State Highway Engineer is charged with the planning, construction and maintenance of the State's highways and roads. It may receive federal grants and may acquire land for rights-of-way by receiving it as a gift to the State, by buying it, or by condemning it. "In addition, the Highway Department is given the power to do 'all things necessary' to construct and maintain freeways."² (Author's emphasis)

To perform these duties in Fiscal 1971-1972, the Texas Highway Department spent approximately \$669.9 million, of which approximately \$578 million was designated for construction and maintenance. From the \$669.9 million, approximately \$5.7 million was spent for research and planning alone, or an equivalent of about 140 times the total proposed allocation for the T.M.T.C. during the same fiscal year.³

It can be clearly seen in what direction our State has gone in the area of transportation. The Highway Department has gone unchallenged in its construction and perpetuation of a uni-modal system which has laced our State with concrete and asphalt, led to increasing amounts of fuel consumption, increased traffic congestion, disrupted communities and helped create an unequal economic system. True, the mobility provided by our State's highways has helped establish better communication between people and communities in different parts of the State, but the time has long past arrived when we should begin to use our new technology to create a transportation system which will better serve the mobility needs of all citizens. Especially is this true in the present times of inflation - recession, increased environmental pollution and the energy shortage.

New Emphasis Needed in State's Role. Increased State funding is needed in the development of a multimodal transportation system which would include rapid rail transit, buses on special lanes and in mixed traffic, mini-buses involved in a demand responsive program, and the automobile. The money should be allocated through a centralized agency whether it be the present Texas Mass Transportation Commission or a Department of Transportation, where an overall view is possible. A centralized department would assure a more reliable funding and planning process, and would be the agency helping to secure and utilize federal grants such as those presently received from the federal Urban Mass Transportation Administration. Funds are presently existing, and others could be made available by legislative action. An example of an existing fund that could be shared is the large Texas Highway Department's Trust Fund. From Fiscal Year 1966-1967 to Fiscal Year 1971-1972 this balance has ranged from a low of approximately \$119 million to a high of approximately \$174 million, and has shown a five-year increase of 22.7%.⁴

Presently, State legislation is on the books which can aid in the development of public transportation, and the administration of it. Following is a brief review of three legislative enactments pertaining to public transportation.

State Legislation ⁵

Article 1011m - The Establishment of State Regional Planning Commissions.

This legislation established State Regional Planning Commissions, "the general purpose of which is to make studies and plans to guide the unified, far-reaching development of the area, to eliminate duplication, and to promote economy and efficiency in the coordinated development of the area." (Sec. 4, par. a) This Commission, among other things, can plan for the development of transportation systems. It may "purchase, lease or otherwise acquire, hold, sell or otherwise

dispose of real and personal property". In each region of the State where a Planning Commission has been established, every governmental unit shall submit loan or grant-in-aid applications (to the federal government or State agencies) to the Commission for review and comment before the application is filed. If the plan has regionwide significance, the Commission shall determine whether or not it is in conflict with regional plans, and thereupon make comments before submitting the application to the funding entity.

"A Regional Planning Commission is authorized to apply for, contract for, receive and expend for its purposes any funds or grants from any participating governmental unit or from the State of Texas, federal government, or any other source." (sec. 6, par. a) The Commission, however, will have no power to levy taxes of any character. State funding of these Commissions will be on a 50-50 basis with matching funds from participating members or the federal government.

Article 1118x - Metropolitan Rapid Transit Authorities. This act, although authorizing the establishment of a regional rapid transit authority, is so specific as to render it useless to the state as a whole. For example, its population and density requirement enables only one metropolitan areas to establish such as system, Houston. Also, its exemption of Bi-county Metropolitan areas prohibits the Dallas-Fort Worth region from creating a similar authority.

Proceedings for the creation of such an authority shall be instituted with a petition of 5,000 signatures of qualified voters in the principal city (city with largest population within metropolitan area).

Management, control, and operation of an authority and its properties shall be vested in a board consisting of nine members; five appointed by the governing body of principal city, two appointed by the commissioner's court

of the county of the largest population of all counties within the boundaries of the county, and two who shall be appointed by the mayors of all incorporated cities within the boundaries of the authority. Once the authority is created, a special election is to be held to authorize the levying of a motor vehicle emissions tax.

The powers of the authority shall be as follows:

- . Perpetual Succession
- . The right to sue and be sued; institute suits without security of cost; appeal without supersedeas or cost bond.
- . Obtain and hold or dispose of real and personal property convenient or useful for the full exercise of any of its powers.
- . Acquire, construct, complete, develop, own, operate, and maintain a transit system of systems within said boundary.
- . Right of eminent domain.
- . Contract for joint use the facilities of public or private utilities, communication system, common carrier or transportation system.
- . Establish or maintain rates, fares, tolls, charges, rent, or other compensation for use of facilities.
- . Obtain loans and grants from federal government or State of Texas.
- . Sell, lease, or otherwise dispose of rights, interests, or properties which are not needed or inconsistent with its efficient operations
- . Make rules and regulations governing use of facilities.
- . Lease any part of system so long as terms are given written consent of the governing body of the principal city.
- . Actions of this authority are declared to be public and governmental function.

The authority, however, shall have no power to levy ad valorem taxes on property nor secure any bonds or notes on ad valorem tax revenues.

Article 1118w - Mass Transportation Systems; Power to Own; Acquire, Construct, Operate, etc.; Federal Grants and Loans; Revenue Bonds. This article authorizes cities and towns in Texas to accept loans and grants from the federal government to finance the acquisition, construction and renovation of mass transportation systems. These systems may operate in the city, its suburbs and adjacent areas. It also authorizes planning, development, demonstrations, and improvement for mass transportation systems. Cities and towns may issue revenue bonds for such purposes.

Along with these pieces of legislation, the State assists in the development of a unified work program for the planning and development of public mass transportation systems. The main state funding source, however, is the State Highway Trust Fund and the Highway Department's influences is, therefore, felt too strongly in the development of plans. The State must now look toward the creation of a department of transportation with more emphasis on transit modes other than private automobiles.

The local areas of our state, in particular our municipalities, have been and still are in need of public transportation systems but are unable, through local revenues, to fund systems complete enough to do the job. A number of cities have turned to the federal government for aid because of the non-existence of state aid for mass and public transportation. Some cities now own the transit systems operating within their boundaries, having bought them out when these systems went into debt. These cities see the value of public transportation and are requesting aid to salvage these and to make improvements. They must look to the State and National governments because of taxing limitations placed on them by the State. It is highly unreasonable to attempt to make public transportation pay for itself from fares alone. In doing so, the people are forced to pay directly for a second system. It would be reasonable to suggest that had our transportation systems been historically reversed and we were presently attempting to build a highway network the same judgement could be made about it that is being made about our public transportation systems. That is, people cannot afford to pay for two complete and independent systems. Therefore a balanced and integrated multi-modal system needs to be developed and funded from a common source, with funds apportioned according to priority of needs.

The State must now take the lead in providing assistance for the development of a public mass transportation system. Our roads and highways already exist and need only maintenance, whereas major improvements are needed in public mass transportation. The degree of mobility and accessibility for our citizens lie at the foundation of further economic and social improvements. At the present time we face the ever increasing prospects of a worsening energy crunch, a continuing downward slump of our economy, and a continuing demand for quicker, easier and safer means of travel. The planning, construction, operation, and maintenance of a balanced system would strongly aid in the solution of these problems. The State must act now, for the longer the delay the more costly the transition that must inevitably take place.

FOOTNOTES

¹Urban Transportation in Texas, Report of the Transportation Committee to the Texas Urban Development Commission, p. 14.

²Transit Laws 1970, A report to the Urban Transit Committee of the Houston Chamber of Commerce, 1970, Chapter II, p. 12.

³Texas Almanac 1974-1975, "Highway Department 1972: Receipts and Disbursements", p. 396.

⁴Texas Almanac 1974-1975, "Highway Department 1972: Receipts and Disbursements", p. 396.

⁵Vernon's Annotated Civil Statutes of Texas, Vol. 2a, Cumulative Annual Pocket Part, pp. 122-125, 221-234.

SECTION X

**CURRENT TRANSIT PROGRAMS AND PLANS
IN TEXAS CITIES AND REGIONS**

CURRENT TRANSIT PROGRAMS AND PLANS
IN TEXAS CITIES AND REGIONS

Nationally, there are two types of public transportation which operate in metropolitan areas:

1. Fixed rail or route

- a. Commuter railroad - multi-purpose carrier in that it operates on the same tracks as inter-city rail traffic. The commuter train is characterized by high-speed and high-passenger carrying capacity. One reason that it operates at high speed is because stops are widely spaced.
- b. Rapid transit - usually operates within the confines of the center city. More recent transit lines, however, reach far out into the suburbs (e.g. Bay Area Rapid Transit). Can carry 60,000 persons per hour, approximately the same number as twenty lanes of freeway.
- c. Streetcar.

2. Motorized bus and taxi. These are outgrowths of the auto age, and share the same right-of-way as the private automobile. Flexibility and volume (bus) are their advantages. Speed is not.*

Type 2 above is the only type of intra-city public transportation used in Texas at the present time, although El Paso has definite plans to begin construction of a monorail from El Paso to Juarez, Mexico. This city is further alone with implementing an alternative mode than any other city in

*San Antonio, for example, is proud to have gotten their average bus speed up to about 13.6 miles/hr. "This does not sound like much, but if you are familiar with the industry, it is very good." (Remarks by Norman Hill, General Manager, San Antonio Transit System, hearing at San Antonio, August 21, 1970.)

the state. Ford Motor Company has made the proposal for the monorail, which may be an indicating that diversification will be forthcoming from the auto industry.

An estimated 975 motor buses and 1,125 city buses were registered in Texas in 1972. However, many Texas cities of considerable size (e.g., Arlington) have no public (city) buses. Others do not even have a taxi service (private or public, Seguin, for example).

Major cities of the state, where congestion and pollution are becoming intolerable, report having reached the strangulation point - a crisis, in other words. Autos, freeways, and buses are not the answer, especially where land use is intensive. Even in smaller cities where growth and population densities have not yet created a crisis, a serious problem of financing bus operations exists. Only the border cities have sufficient ridership to help them struggle along on farebox revenues. The number and age of buses, maintenance facilities, shelters for passengers and general quality of service have diminished, however. Subsidy by the cities is essential all report, not only to improve quality, but to maintain even the current level of operations.

Throughout the state, transportation planning and the problems therein are a constant source of concern for cities. Comprehensive transportation plans have been developed in some areas. The following is a brief summary of major transportation plans in the state. Other transportation activities are outlined for a few key urban areas.

THE HOUSTON PLAN

The impetus for the formation of a transit program by Houston came largely through the realization that future transportation needs could not be met by the current system. Although Houston has an extensive system of freeways and streets, the expected growth in population and traffic will far outstrip the ability to add highway capacity in the future. It is also felt that peak period congestion, now frustrating to many motorists, will generally worsen despite continued highway construction. Highway travel in the peak periods is now the best it will ever be, in most areas, unless public transportation and other policies are changed substantially.

Other impetus for the program came largely through concern over air pollution, the energy crisis, land development trends, possibilities for technology to change living and business conditions and the like.

Throughout the formation of the program citizen participation was sought. This participation had a substantial impact on many of the conclusions and recommendations. The community concerns revolved around dialogue centered in 13 subject areas. The titles of the concerns were:

1. Mobility for people without cars
2. Outlying center mobility
3. Central business district mobility
4. The environment and the automobile
5. The role for rapid transit
6. The effect of traffic congestion on bus service
7. Out-of-pocket costs: Transit versus private vehicles
8. Financial problems of bus operators
9. The city's role in bus service operations
10. Present and future quality of freeway travel
11. Role of freeways in providing better bus service
12. Airport ground transportation services
13. Financing a major program

From these points of concern evolved the objectives of the transit action program.

The objectives were defined as:

1. Increase transit ridership
2. Improve cost-competitiveness of transit
3. Improve the image of transit
4. Reduce traffic congestion
5. Provide for safe and productive public investment
6. Provide expanded mobility for non-car users
7. Improve CBD accessibility and mobility
8. Improve accessibility of other high activity centers
9. Stimulate social and economic improvements
10. Maximize joint use of existing transportation rights-of-way (highways and railroads)
11. Encourage more rational land use patterns
12. Reduce air pollution, noise and other environmental problems

With these concerns and objectives in mind, the consultant firm (Alan M. Voorhees and Associates) made a study of possible transit alternatives. The study concluded that an extensive fixed guideway* system, with some buses would gain the greatest public acceptance in Houston because it is a sound technical solution and because it appears to meet the expectations of a large part of the public.

Further, a total-bus mass transit system was deemed undesirable for several reasons. Although such a bus system might appear the most attractive initially, long-range considerations deem it inadequate. For example, such a busway system, by 1990, would be causing the number of peak-hour buses entering the CBD to be well beyond the practical/desirable capacity of the downtown street system. If the buses were to be placed below ground to avoid this problem, it would be seen that the construction of a CBD subway for buses would be much more costly and disruptive than construction of a CBD subway for fixed guideway vehicles. By 1990 its overall capacity would be easily absorbed by projected demands, leaving negligible unused capacity for the future, without major additional construction. In addition, it is likely

* Roadbeds to be used exclusively by transit vehicles.

that an all-bus system would today be poorly rated in light of present attitudes and expectations of most of the public.

From these conclusions a comprehensive transportation plan for Houston was formulated. The plan calls for (1) a long-range transit program looking to the end of the century, (2) a Stage One rapid construction program for the 1970's, and (3) an immediate five-year bus improvement program.

Bus Program

Major improvements in bus service are called for. These improvements are to be completed in five years, before rapid transit service is available, but coordinated with rapid transit plans to permit a simple transition when Stage One rapid transit projects are completed. The program calls for capital expenditures, to be highlighted by acquisition of 745 new buses, of approximately \$50 million.

Stage One Rapid Transit

Stage One provides 40 miles of rapid transit corridors (see figure 1). The mileage includes the length of the downtown subway which is for fixed guideway routes. Additional semi-express and local bus routes will be provided beyond the five-year bus program, including bus priority routes and routes into adjacent counties. It is estimated that the total transit system will require 800 buses and 90 fixed guideway vehicles at the end of Stage One. The cost of Stage One and all bus improvements through Stage One, including the five-year program, is \$795 million.

Stage Two Rapid Transit

Stage Two will bring the total miles of rapid transit to 80. Future work here, to begin perhaps sometime during the first decade while work on Stage One is still in progress, will extend six of the seven rapid transit

routes and add two new routes, one toward downtown and one to be crosstown between the north and southwest corridors. Total transit capital costs at the end of Stage Two will be \$1,450 million.

Future Extension (Stage Three)

Developments beyond Stage Two are assumed not to occur until after 1990. Figure 1 indicates general locations which are sound guidelines to reaching out toward Conroe, Liberty, Baytown, Bay City, Galveston, Richmond-Rosenberg and Hampstead.

It should be noted that this plan is being revised for future considerations.

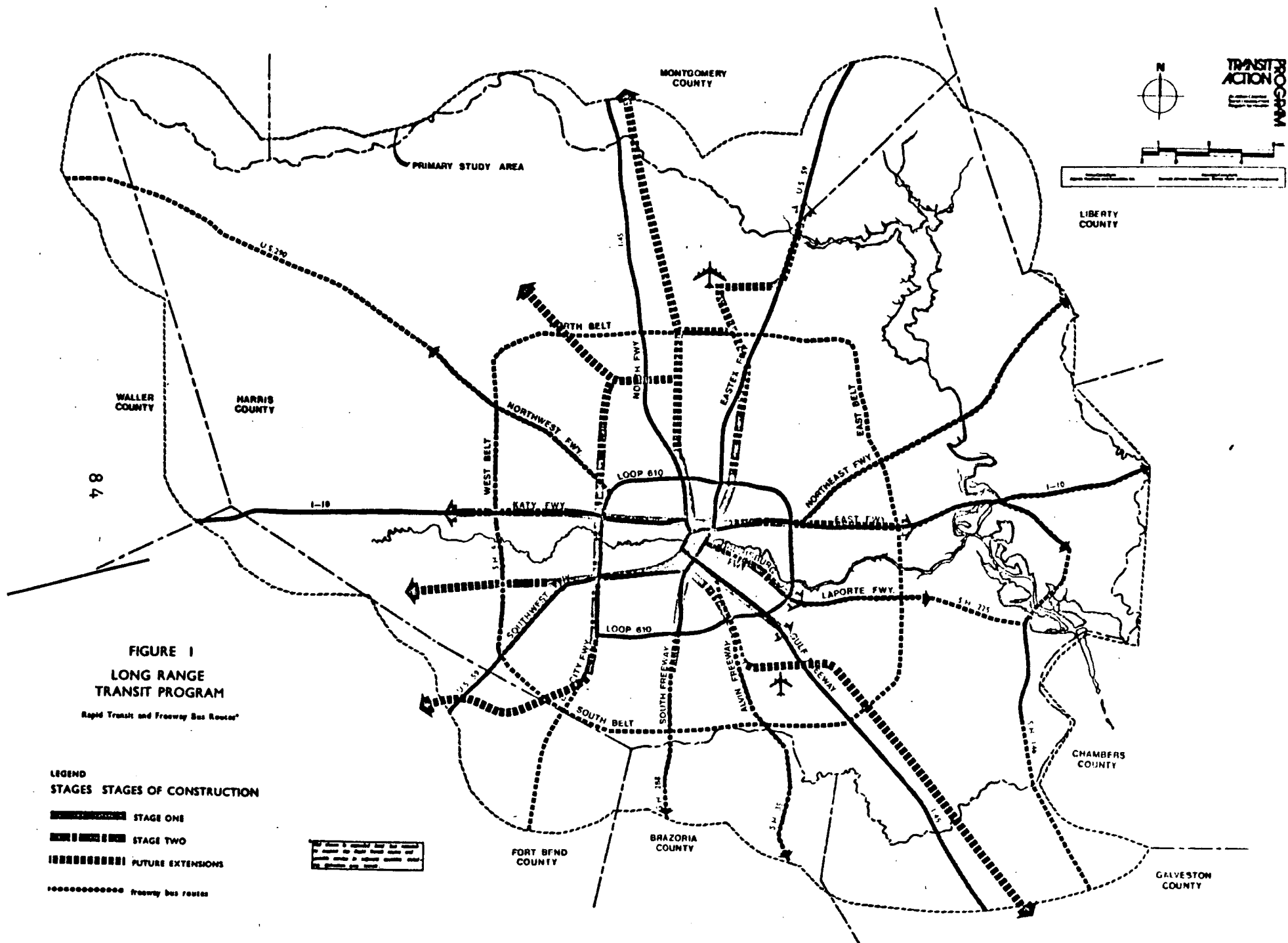
Financing

Stage One and Stage Two together have a cost which is estimated at nearly \$1,500 million. This figure is approximately the same for the highway program over a similar time span. The Federal grants program for transit is designed to provide up to two-thirds of the capital cost of the project, subject to limitations on the maximum dollars which may go to any one area of the country. Stage One of the long-range program and the bus improvement program for the first five years have a cost estimated to be the amount which Federal grants could conservatively be assumed to support in the immediate future. Local financing is to be designed to support one-third of the Stage One costs - the portion that could not be met by Federal grants. To raise the local funds a tax on motor vehicle emissions was formulated based on cubic inch displacement.

Legislation

In order to operate a regional transportation authority special state legislation was needed. Houston was successful in gaining enabling legislation. However, because of hasty planning and poor political considerations the local electorate voted down the creation of the authority. The result was not seen

as a rejection of mass public transportation. It should be noted that the constitutionality of such an authority is questionable. Some feel that an amendment is necessary.



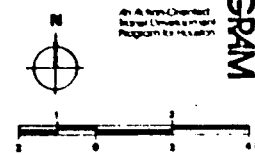
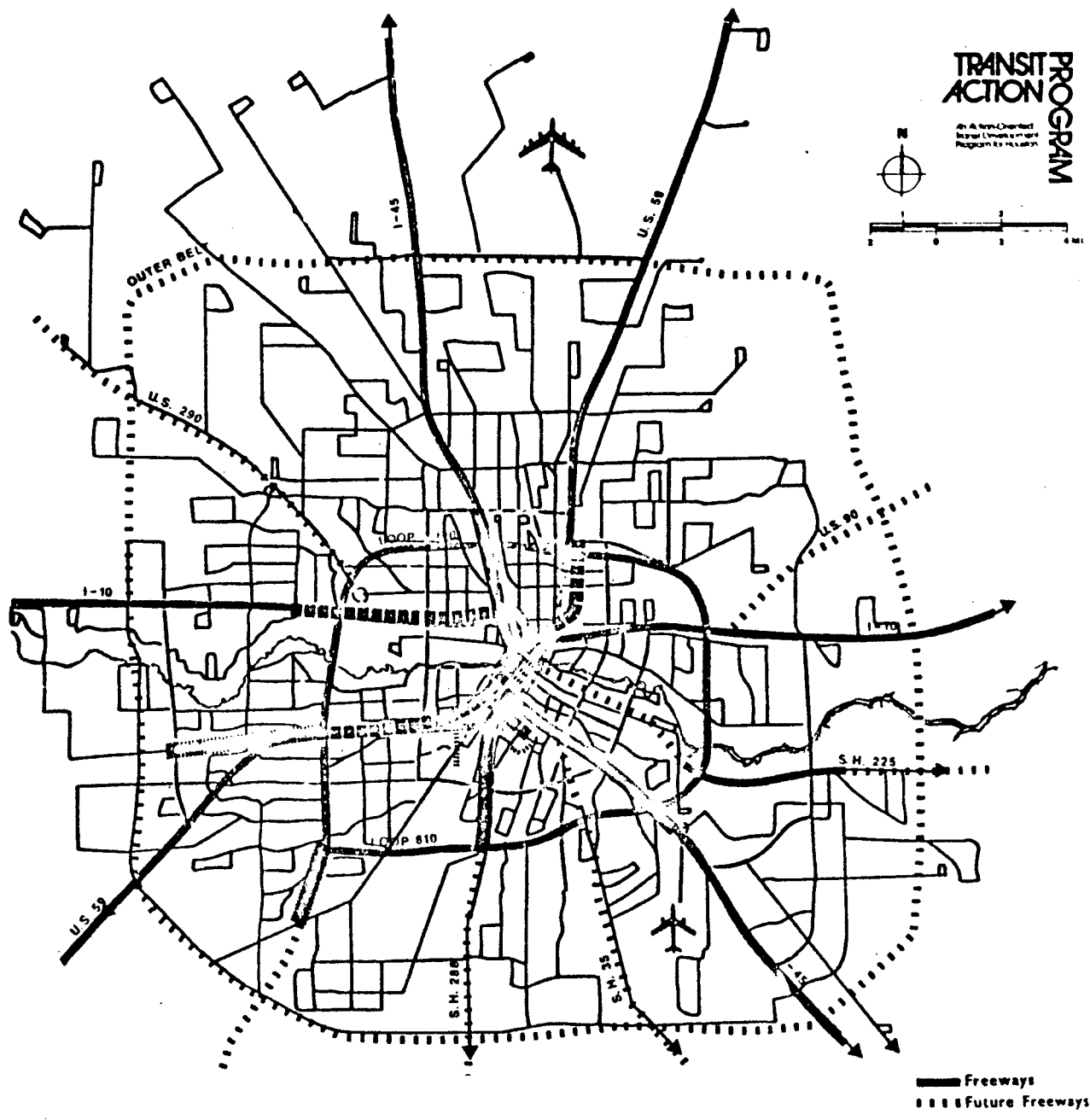


FIGURE 2
STAGE ONE RAPID TRANSIT
 INCLUDING LOCAL TRANSIT WITH
 BUS PRIORITY ROUTES



LEGEND

RAPID TRANSIT ROUTES

■■■■■ FIXED GUIDEWAY

■■■■■ BUSWAY

■■■■■ BUSWAY-AT-GRADE (Temporary)

■■■■■ SECONDARY DISTRIBUTOR

LOCAL TRANSIT ROUTES

—— BUS PRIORITY LANES

—— OTHER BUS ROUTES (Approximately)

—— Freeways
 - - - - Future Freeways

THE NORTH CENTRAL TEXAS REGIONAL PLAN

Background

The development of this plan and its final approval had its beginnings as subregional plans for municipalities in the "Intensive Study Area" which included all of Dallas and Tarrant Counties and parts of Parker, Denton, Collin, Rockwall, Kaufman, Ellis, and Johnson Counties. Cities providing sub-regional plans included Hurst, Euless, Bedford, Arlington and Irving in the Mid Cities area and Richardson and Mesquite in Dallas County.

These plans were reviewed and further developed in an attempt to provide a regional coordinated plan. The Transportation Department of the North Central Texas Council of Governments with assistance from the Regional Planning Office of the Texas Highway Department attempted to provide alternative transportation system concepts for both ground and air transportation under guidance from the Steering Committee of the Regional Transportation Policy Advisory Committee. The Total Transportation Plan was developed under the following goals and objectives.

Transportation System Goals and Objectives¹

- | | |
|---------------|---|
| <u>Goal I</u> | Provide most efficient system possible taking into consideration available capital and implementation capacity. |
| Objective A. | System must meet Regional Goals at minimum capital costs. |
| Objective B. | Minimize operator and user costs consistent with service benefits. |
| Objective C. | System must be designed not to exceed available financial resources. |
| Objective D. | Maximize use of existing and future systems. |

- Goal II Provide system plan flexible enough to be staged and adapted to changing conditions in order to provide acceptable service.
- Objective A. Maintain flexibility.
- Objective B. Maintain Service and Comfort
- Objective C. Maximize Safety of User and Pedestrian
- Goal III System must maintain level of service to meet other goals.
- Objective A. Maximize geographic coverage to meet demands.
- Objective B. System location must minimize travel time in Region

Transportation Impact Goals

Economic and Land Use:

- Goal IV System must strengthen economic base of region
- Objective A. Maintain region's position as important distribution center.
- Objective B. Minimize use of taxable land for transportation through use of joint rights of way.
- Objective C. Systems must open new areas in region for development.
- Objective D. Avoid undesirable affects on labor force directly influenced by transportation expenditures.
- Goal V Provide a balance and coordination between land use and Transportation System Development.
- Objective A. Plan the system to complement established land use plans.
- Objective B. Develop the system at a rate compatible with desired community growth as determined by the local governments.
- Objective C. Encourage development in those areas where municipal services presently exist.
- Objective D. Plan the system applying the principles of minimum right of way acquisition and joint use of land for related transportation purposes.
- Goal VI Provide a system reinforcing existing land uses
- Objective A. Reinforce and strengthen existing business and industrial assets.

Objective B. Support internal development of all high activity centers including central business districts.

Natural Resources and Environment

Goal VII The Transportation System should minimize any harmful effects on surrounding ecology and physical environment and should, if possible, stimulate improvement of environment.

Objective A. The form, design, and appearance of the manmade elements of the system should enhance the visual form and image desired for the entire Region.

Objective B. Minimize noise pollution

Objective C. Minimize air pollution

Objective D. Minimize growth in ecologically sensitive areas of Region at the same time being consistent with planned growth.

Objective E. Minimize destruction of historical sites.

Goal VIII Provide a system which will minimize the use of scarce natural resources.

Objective A. Minimize consumption of energy due to travel.

Objective B. Minimize consumption and encourage recycling of scarce raw materials in the construction of system's facilities without compromising material specifications for good design and construction.

Social and Quality of Life

Goal IX Plan a system providing all people equal access to a wide range of social and economic opportunities.

Objective A. Assure equal access to employment, commercial, educational health care and recreational/cultural services and facilities.

Objective B. Enhance the mobility of all people in the region.

Goal X Provide a System encouraging a stronger sense of Community and minimize disruption.

Objective A. Minimize residential and employment displacement in location of transportation facilities.

Objective B. Minimize the negative effects of transportation facilities and traffic flow on safe and easy travel within neighborhoods, particularly pedestrian travel.

- Objective C. Provide equal transportation opportunities to all social groups within political jurisdictions.
- Objective D. Discourage location of transportation facilities which encourage high density populations when such higher density will be a detriment to the quality of life in the community.
- Objective E. Accommodate intra-community trips to a variety of activities.

The alternative transportation system concepts that were developed included five ground transportation alternatives and four airport alternatives.

The ground transportation alternatives included the All Transit Alternative, the Primarily Transit Alternative, the All Highway Alternative, the Primarily Highway Alternative and the Do-Nothing Alternative. After review of these five alternatives the Steering Committee directed the Transportation Department of the NCTCOG to refine the Primarily Highway Alternative. The resulting plan became Alternative #6 which was later adopted by the Steering Committee. (See Map) The refinement of the Primarily Highway Alternative into Alternative #6 was accomplished under the following objectives:

- A. "To improve the Primarily Highway Alternative with some additions which would yield a relatively greater level of highway service."
- B. "To improve upon the transit service provided under the Primarily Highway Alternative."
- C. "To upgrade State Highway 199 in Tarrant County to freeway standards, creating a new freeway into downtown Fort Worth."²

After the review of the Alternative #6 plan, alternative airport system concepts were evaluated based on these criteria:

- A. The time and distance from a proposed airport to the population or activity center that generate general aviation activity.
- B. The availability of airspace suitable for aircraft operations.
- C. The total cost of land and airport facilities.
- D. The quality of ground access to the facilities and the demand on these facilities.

- E. The impact on land use and the environment.³ The four concepts developed included the Single Runway concept, the Large Urban and Large Suburban airport concepts and the Dual Runway concept was selected. This concept provides for a medium amount of intermediate size airports.

With the resulting selection of Alternative #6 for ground transportation and the Dual Runway concept as the most advantageous airport alternative, the Total Transportation Plan for the North Central Texas Region was developed. This would result in a total capital cost of \$3.304 billion with a local public share of \$425.2 million, all in 1974 dollars.⁴

Primarily Highway Alternative Projects

(185 miles of freeway - 65 miles of exclusive guideway transit facilities)

Highways

Completion of State Highway 360 - Mid Cities area
Completion of Interstate 820 - Loop around Fort Worth
New freeway facilities around Dallas/Fort Worth Airport
Construction of northern portion of Loop 9 - Proposed loop around Dallas
Several freeway widening projects

Transitways (Exclusive roadways for buses and carpools, from Dallas, Fort Worth CBD's on radial corridors)

Dallas

Extend from CBD to Loop 12

Fort Worth

CBD to Berry Street - University Drive - 28th Street - Oakland Blvd
Loop
Transitway between Fort Worth - Dallas/Fort Worth Airport - Dallas

Premium Bus Service

Dallas-Fort Worth Turnpike
Loop 12
Northern portion of 1 - 635 in Dallas County

Additions Contained in Alternative #6⁵

Highways

Mid-Cities Freeway - paralleling Interstate Highway 35E into Denton County from Dallas

South and Southeast Loop 9
East Loop 9 Loop around Dallas
Southwest Loop 9
Dallas North Tollway - Loop 9 connection
Spur 484 - new construction
State Highway 199 - upgrading to freeway status
Spur 408 Extension - into Southwest Dallas County
Mid Cities Freeway Connection - north of Dallas/Fort Worth airport
Interstate Highway 35W Connection
Rosedale Connection to Interstate Highway 30
Other Projects

Transitway Additions

Expand Premium Bus Service
Rail to Airport Instead of Busway
Transitway Extensions
Fort Worth Subway Extension
Transit System Support Facilities

The transit portion of the NCTCOG plan (Alternate #6 as adopted) consists of 40 miles of rail rapid transity, 66 miles of transitways, approximately 4,300 route miles of priority and express buses, and nearly 1,900 miles of feeder buses for approximately 800 square miles of service area.

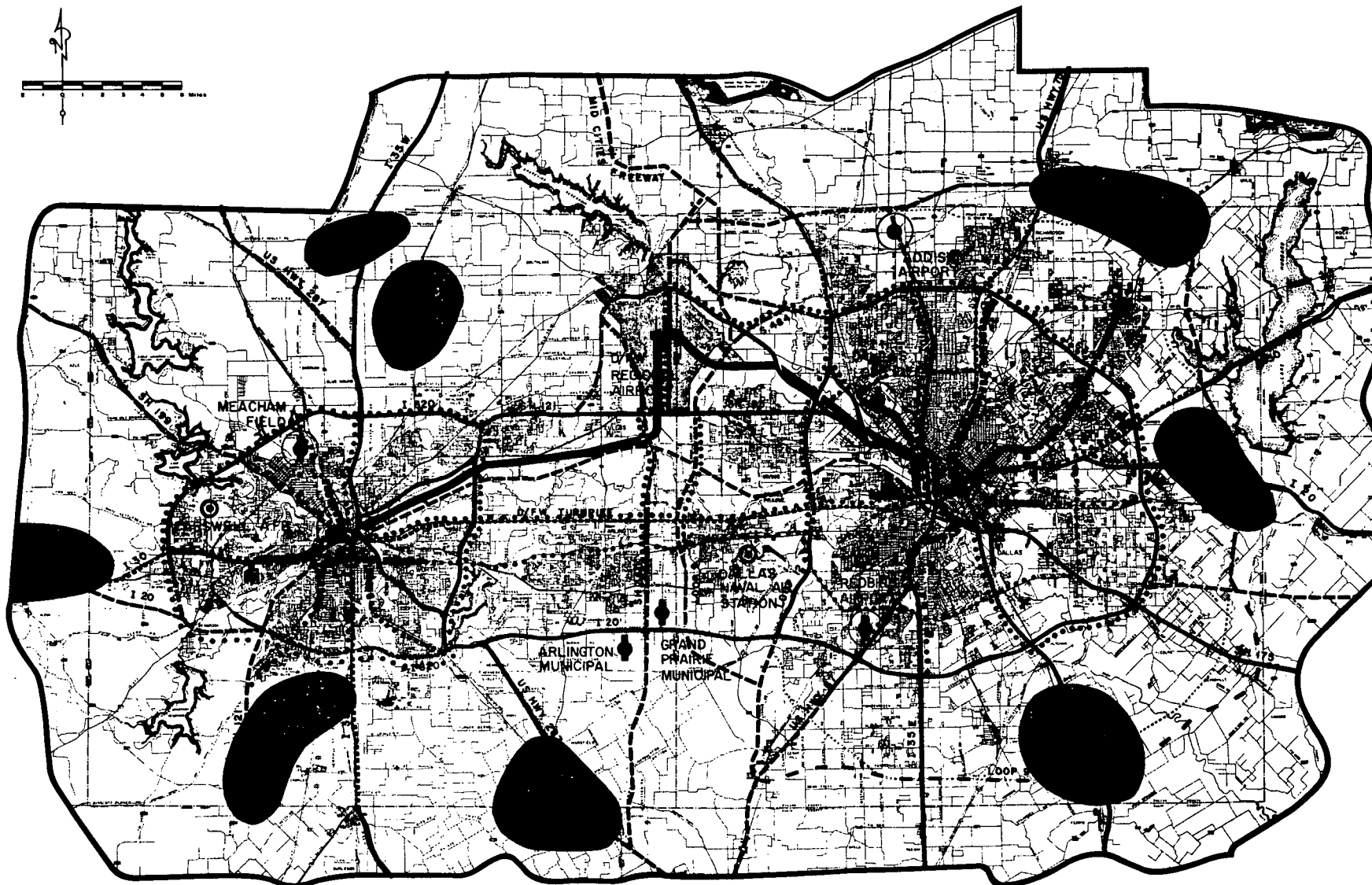
An Evaluation

The arguments presented for Alternative #6 ground transportation system display a strong pro-highway bias. The presentation of Alternative #6 offers no direct comparison between itself and other alternatives. This is important considering the reasoning given for the development of Alternative #6. It was stated at the earliest part of the transportation plan that the two extreme alternatives were initially discussed (All Transit and All Highway), and from those points an attempt was made at development of a multi-modal transportation system - thus Alternative #6. It must be remembered, however, that this North Central Texas region, and for that matter the entire state, is for all practical purposes already at one extreme of transportation - all highway. We must now look at the other extreme and

consider it carefully in order to begin developing a truly balanced multi-modal system.

Statements in the plan such as one saying that Alternative #6 will provide the least highway congestion and thus less energy consumption must be looked at carefully.⁶ That statement may be true for the present, but consider the future. A case in point could be North Central Expressway in Dallas. That is only one of many similar cases. Other such statements made in favor of Alternative #6 must be examined to see if comparable evaluations were given of all the other alternatives. In many instances, no direct comparison was given for all alternatives.

In summary, it is felt that the presentation of the plan was not done in a manner which would give a clear picture of the advantages and disadvantages of all alternatives. At the same time, it is felt that Alternative #6 does not produce a truly balanced regional transportation system due to its continued emphasis on automobile travel with secondary emphasis on public transportation systems.



LEGEND

FREEWAYS

- EXISTING — NO IMPROVEMENT
- EXISTING — TO BE IMPROVED
- NEW CONSTRUCTION
- - - RIGHT OF WAY AND STAGED CONSTRUCTION

TRANSIT

- RAIL RAPID TRANSIT
- BUS AND CARPOOL ON TRANSITWAY
- BUS IN MIXED FLOW
- TRANSIT SERVICE AREA

EXISTING AIRPORTS

- + AIR CARRIER AIRPORT
- ⊙ GENERAL AVIATION TRANSPORT AIRPORT
- ⊙ GENERAL AVIATION TRANSPORT AIRPORT (PRIVATELY OWNED)
- ⊙ GENERAL AVIATION UTILITY AIRPORT
- MILITARY AIRPORT

NEW AIRPORT LOCATION

- GU — GENERAL UTILITY
- BT — BASIC TRANSPORT

- 1 — SINGLE RUNWAY
- 2 — DUAL RUNWAY

RECOMMENDED 1990 TOTAL TRANSPORTATION PLAN *

FIGURE 54

* THE HIGHWAY PROJECTS SHOWN REFLECT ALTERNATIVE NO. 6 AS MODIFIED AND TESTED BY THE TEXAS HIGHWAY DEPARTMENT, SUBSEQUENT TO TESTING AND EVALUATION OF ALTERNATIVE NO. 6 BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS. NON-FREEWAY IMPROVEMENTS ARE NOT SHOWN.

FOOTNOTES

¹The Total Transportation Plan for the North Central Texas Region for 1990, p. A. 1 - A.5.

²Ibid., p. ix.

³Ibid., p. xi.

⁴Ibid., p. 119.

⁵Ibid., p. 96.

⁶Ibid., p. 104.

Other Transportation Activities

Alamo Area Council of Governments - San Antonio.¹ San Antonio boasts of a bus system in which ridership is so high that to advertise for more riders would create a problem of not enough buses. Operating without subsidy until last year, \$2 million per year is needed now just to stay above water. Owned by the city and operated by a board, the transit system in the past always had to pay as it went. Bond endenture is paid out of the farebox.

Presently, one park-and-ride arrangement is successful. All bus routes are radial, and all pass through downtown except one. This is based mostly on efficiency for bus operation, not necessarily on where the people want to go. This will probably continue to be the philosophy until more money is available.

This transit system has obtained UMTA funds for capital costs. Based on a 45% off-peak, 55% peak ridership, federal funds have been easier for San Antonio to get than some Texas cities have experienced. Buses are used throughout the day; downtown is not often vacant.

San Antonio has approximately 90 percent of the population in the region. Ten minutes out from the city is rural with cultural enclaves (Karnes City, Kerrville, New Brunsfel and Seguin) surrounding. Consideration is being given to a rural transportation demonstration program in this region. Texas Mass Transportation is developing guidelines for such a demonstration. Seguin wants to get some public transportation, not even having a taxi at the present time. Military Assistance to Safety and Traffic Services (MASTS) is an example of rural-urban cooperation in this region. Helicopters operate

out of military bases in a 100-mile radius. Aging transportation programs are also using MASTS.

There is no application of rail transit in San Antonio at the present time and it is not envisioned in the short-term, except perhaps in isolated areas such as the HemisFair Plaza where "people-movers" could be utilized. However, the Federal Railway Administration and UMTA have been approached in regard to San Antonio's getting into rail transit planning. A private developer has done a rail feasibility study in connection with a new town northwest of San Antonio.

Some planning has been done in regard to relocating existing railroad lines in San Antonio. Presently, rails criss-cross the city and are creating a traffic safety problem at crossings. Relocation is an economic consideration, as well as safety, but STATE AUTHORITY IS NEEDED to implement the relocation and subsequent efficiency improvement.

The Alamo Area Council of Governments at San Antonio has been designated as the Metropolitan Planning Organization (MPO). Trying to obtain funds from UMTA for a long-range study, COG is assembling a unified work program and other qualifying documents. The present plan is oriented toward a Metropolitan Transit Agency. While highway-oriented (all rubber-tired vehicles), various applications are being considered in the plans.

Capital Area Planning Council (CAPCOG) and the City of Austin². Current federal funding for this regional area is for two years (Section 9, Technical Study Grant, Urban Mass Transportation Act of 1964) in the amount of \$132,912. The City of Austin received \$83,412 of this. When funding period is up, September 1, 1975, CAPCOG is supposed to have a new Unified Work Program finished.

The COG is redefining "urban areas," doing an economic base study, and population projections for the region. This is already complete for the City of Austin, where improved bus operations are a part of their "goals for Austin" type of program. Bicycle routes and the University of Texas bus system are also coordinated to constitute Austin's present transit system. Subsidy by the city in the amount of \$799,784 was required for fiscal year 1973-74.

Though perhaps not peculiar to Austin, certain problems in land use and coordination of transportation planning are glaring. For example,

1. District plans are not coordinated with the county. Also county transportation plan (District Highway) are not coordinated between districts. Specifically, Interstate 27 (Lubbock to Houston): about eight plans pass this interstate through Austin, yet it is not mentioned in district plans.
2. Amtrak Railroad is not allowing improvement and efficient use of rails. This is important to the area.
3. Land use in areas outside the city are not compatible, complicating task of planning a "continuing, coordinated, comprehensive" unified regional transportation program.

The rural portion of the current mass transportation act (demonstration projects) becomes a consideration in regional planning, as do other programs (EDA, CAA, and Rural Development are all doing planning at Texas Department of Community Affairs).

Ark-Tex Council of Governments and City of Texarkana.³ This region is in preliminary stages of setting up a bus system. A 1966 transportation plan has been updated every three years (UMTA funds). Funds from Section 112 of the 1973 Highway Act have also been used to estimate population, determine land use, and the like. A mass transit study was done in 1972 and \$15,000 is presently being used to update this study.

According to regional views, buses are believed to be most feasible for the area, but mini-buses of "on-call" type could be more efficiently used in some areas. COG has been designated as the MPO, but the Texarkana plan includes the entire metro area as well as the city.

Also of interest in this region and important to consider in future plans:

1. Dangerfield, Lone Star and Hughes Springs are in a triangle approximately six miles apart. A \$65 million Lone Star Steel expansion is going on. Already, 3,500 rural employees go there to work. COG has buses to Lone Star, operating on a contract basis.
2. Southwestern Electric Power Expansion (Shreveport firm). Coal is brought in by rail from Wyoming.

Transportation is vitally needed (North and South) to connect with interstate highways.

Concho Valley Council of Government and the City of San Angelo.⁴ COG has been designated as the MPO in this region and is just beginning a Unified Work Program. Population projection for 1985 is 102,582.

The City of San Angelo has a "delapidated" bus system. Last year the city lost \$70,000 and the bus was on a 45-minute schedule. UMTA funding was received in 1970; five, 32 passenger buses were purchased and two smaller vehicles. Settlement patterns in the area and the high percentage of families owning automobiles presents a challenge to obtain ridership under present conditions.

Coastal Bend Council of Governments and City of Corpus Christi.⁵ The following has been accomplished toward updating and improving public transportation in this region:

1. The City of Corpus Christi has acquired 15 buses with a capital grant received from UMTA.
2. UMTA money has been received for a COG study.

3. Demonstration bus system between Robstown and Corpus Christi, where there is much unemployment.
4. Ready to re-submit regional transportation plans to UMTA for funding.

Working with Texas Mass Transportation Commission.

The City of Corpus Christi has been designated the MPO for this region.

Lower Rio Grande Valley Development Council - McAllen.⁶ The City of McAllen has been designated as the MPO for this region which includes only Hidalgo County (cities of Edinburg, Pharr, McAllen and Mission). This region has a population of 350,000 and is growing very rapidly, tourism being one factor. The need for mass transportation is urgent; 55 percent of the population is at or below the poverty level. Transportation is badly needed to help improve employment situation.

A big problem exists with funding "red tape". "If they would just give us the guidelines and let us develop them--The ideal of one group (Intermodal Planning Group) is great, but in reality it is not functional". There are three plans in the area, one plan having been submitted before the MPO designations (Brownsville, Harlingen-San Benito are now designated separate) were made. For over six months this region has been trying to get approval of their package for funding.

HUD money (701, through the State Planning Department) was used originally to do transportation planning.

Heart of Texas Council of Governments - Waco. The City of Waco has been designated at the MPO for this region.

Transit plan was completed in 1970 and UMTA funding has aided in the purchase of 12 new buses. The present bus system serves to the city limits of Waco and was subsidized \$150,000 this fiscal year. Though not

successful yet in completing a current Unified Work Program, efforts are continuing in this direction.

A separate program for elderly transportation is apparently successful in this region and five vans are operating for the rural elderly.

Other Regions

Lubbock (South Plains Council of Governments) - COG has a highway-oriented plan and is seeking an UMTA grant for capital improvements. Air Quality Control Board requires that Lubbock must get permits for any new buses.

Wichita Falls - Study was done in 1972 and it is reported that it is "on the shelf and waiting for the Texas Highway Department to move forward."

Kilgore-Tyler-Longview - Regional analysis and economic development studies have been made through the East Texas Council of Governments. A "demand-response" type of bus service is in operation in four counties.

Belton, Kileen, Temple - Transportation planning done by the Highway and County. Main transportation artery from Temple to Kileen has a high mortality rate. Prime spot for future fixed rail facility.

Port Arthur-Beaumont - Just completed a study similar to North Central Texas COG. Health delivery services limited in this area because of lack of public transportation; access to hospitals difficult in several municipalities.

El Paso - Planning is mostly done by the Highway Department, but there have been economic development studies. EPA is clamping down

in this area. A monorail study and proposal have been prepared by Ford Motor Company and international cooperation will be required to implement this project. Presently, three bus lines are now in operation; used to have streetcar line. EPA rulings are accelerating movements toward mass transit.

Laredo - Like the McAllen area, this region has high percentage of unemployment and below-poverty-level income. The South Texas Development Council has applied for UMTA study funds and is working on a Unified Work Program.

Bryan - No COG or city plans, although UMTA study funds have been applied for. State Highway Department very strong in local planning. There is interest in the area, however, for a future commuter train from Bryan to Houston.

Victoria - No plan. No bus.

Abilene - City is MPO. Study completed.

FOOTNOTES

¹Interviews with Gary L. Turnock, Alamo Area Council of Governments, and Frank Kiolbassa, City of San Antonio Traffic and Transportation Department, November 5, 1974.

²Interview with Jose Martinez, Transportation Planner, CAPCOG.

³Contacts in this region were: Aubrey Adcock, Texarkana Public Works Director, and John Davis, City. Also talked with Ray Nail, Mayor of Dangerfield at the Texas Municipal League Meeting in Fort Worth, October 21, 1974.

⁴Contacts in City of San Angelo were: City Manager Howard and his assistant, Don Abell.

⁵

Contacts in Corpus Christi area were Richard Bullock, COG, and Michael Gunning, Long Range Planning Department, City of Corpus.

⁶

Contacts in the area were Robert Chandler, Director of Development Council, and Richard Montesdeoca, Director of Planning for Development Council, who is quoted.

SECTION XI

PROPOSALS FOR NEEDED LEGISLATION

**Reorganization of Transportation Responsibilities
Financing Mass Transportation in Texas
A Regional Authority**

PROPOSAL FOR REORGANIZATION OR TRANSPORTATION ACTIVITIES

Movement of both goods and people is the responsibility of each and all transportation systems in the state. If this is to be adequately accomplished, however, certain acknowledgements must be made. For example, highways move more than folks; railroads move more than freight. Airlines, likewise, are movers of both goods and people. Competition among transportation agencies and departments, long-established regulations of rights-of-way, franchises, specialization and the subsequent compartmentalization have resulted in linkage breaks, time loss, higher costs, and general inefficiency and inadequacy.

Transportation activities must be integrated on a statewide basis. Only at this level will the state have the capacity to provide, through funding and operating, a truly balanced transportation system of all modes to meet the needs of an increasingly urban state.

PROPOSAL

Creation of Texas Department of Transportation

It is proposed that activities of The Highway Department, the Railroad Commission, the Aeronautics Commission, and Texas Mass Transportation Commission be combined into one department. In addition, Texas Mass Transportation Commission should be given specific additional functions and equity in funding with the other departments.

The Texas Department of Transportation should have as its early goal the accomplishment of a state transportation master plan for movement of people and goods.

Funds should be allocated immediately for mass transportation purposes in order for criteria and plans to be coordinated and refined on a statewide basis. These funds would be in addition to those proposed in the financial section which follows and are essential in the hiatus period.

The following should be considered basic accomplishments.

1. Incremental planning. A five-year plan with incremental construction of mass transportation.
2. Segmental Implementation. If each city knows the plan, the mechanics can begin in spite of the fact that implementation is in increments. Coordination with the Highway Department is vital to achieve maximum utilization of new lanes, the right of eminent domain, and the like. Each new phase of mass transportation can be used as it is developed, and eventually the segments will all link.
3. Needs Criteria. The State Department of Transportation should establish guidelines and develop priorities. Local input is an essential element at this stage.
4. Procedural Criteria. For equity throughout the state, and so that each area is aware of statewide plans, procedural criteria will be established for planning and implementation of transportation. Guidelines should be established to assist in local planning. Technical assistance to local governments should be provided where needed to facilitate planning and coordination.
5. Combined Functions. Any fixed system of mass transit must enable the movement of goods as well as people, and serve as a link for shipment of these goods by air or other medium.

6. Standardization. Statewide standardization of mass transit facilities and equipment will effect considerable savings to the state and should, therefore, be required to the extent feasible.
7. State Board. A State Transportation Board will call meetings and conduct negotiations with the Railroad Commission or other regulatory bodies. Air rights and the other rights-of-way which railroads hold must be integrated through the total transportation system of the state. Only a State Department of Transportation can assure this. (In metro areas in Texas less than 10 percent of the population lives more than ten blocks away from a railroad tract, or, 90 percent is within ten blocks.)
8. Strategy. The State Department of Transportation will be able to develop the strategy for achieving the goals of a statewide plan. The five-year plan would be a part of the strategy.
9. Research. Existing state universities are well equipped to conduct technical and policy research. These existing research arms should be utilized by the state.

With a State Department of Transportation, a process can be devised to achieve maximum utilization of land associated with business and commercialism around transportation facilities. This can be achieved with compatibility between modes and lines. Eventually, mass transit can link the state as the interstate highways have connected the nation and there will be an interlocking network of cities within the State.

FINANCING MASS TRANSPORTATION IN TEXAS

ASSUMPTION: There is a need now for mass transportation in Texas.

CONSIDERATIONS:

- . Present taxing arrangements and other financial resources of municipalities and urban areas are inadequate to sustain and/or improve mass transit systems.
- . Without a dedicated, independent funding base, implementation of plans and continuation of public transportation even at present level operations is not possible.
- . Farebox revenues will not support a transit system, even when ridership is high. (In reality, highways, roads, and streets do not pay for themselves, either. Out-of-pocket expenses to users are an additional expense.)
- . A great deal of money will be required to improve the quality (convenience, speed, comfort) of public transportation to attract "choice riders" and get them to leave their automobiles at home (unless, of course, there is no gasoline).
- . Now is the time to purchase right-of-ways for future transit lines. This is cost efficiency.
- . Sharing of state revenue with municipalities and urban areas for public transportation is justified since 41% of Texas traffic is in eight urban counties. (This does not include the cities of Lubbock, Amarillo, Waco, Tyler, Texarkana, Sherman-Denison, Wichita Falls and other areas which are growing rapidly). Up till now Texas cities have had to allocate approximately 20% of their expenditures for street construction and maintenance.
- . Each city and region can best decide what forms of public transportation suit their need, but the state must enable local governments to proceed, helping them to integrate all components into a statewide, balanced system.
- . The state must set up criteria for localities to receive state assistance and a formula for disbursing funds.
- . Funds must be administered at the state level by a department impartial to a one-dimensional (or one-modal) system.

Legislative action is required in two basic arenas to include the above considerations:

1. A permanent, dedicated, and independent state "trust fund" for public (mass) transportation. Not only should this permit 50% of the local requirements for matching federal dollars, but provide a base for state programs.
2. Local financial capacities - allowing local entities to finance and administer operations locally and to match federal or state funds for local capital improvements.

In the first arena mentioned above, the state will be returning a portion of state-levied tax funds to the areas of origin in a manner that will assure their use for public transportation purposes. Potential sources of such a dedicated fund are:

(a) State-levied motor vehicles sales tax - a diverting of 1/4 of the present 4% tax is suggested.

(b) State-levied general sales tax - This would perhaps be a more stable tax base than sales on motor vehicles, though either would be affected by the national economy.

(c) Other state taxes such as a portion of any increase in the state (per gallon) gasoline tax.

The state must allow flexibility to local governments for locally initiated revenue sources. Enabling legislation should permit cities discretion among the following methods:

- (1) Motor vehicle emission tax. Motor vehicles shall be classified by groups based upon the number of cubic inches of engine cylinder displacements.
- (2) City sales tax.
- (3) Registration fee charge on vehicles.
- (4) City sales tax on gasoline.
- (5) Service charges on individual users. This could include fares, parking fees, tolls and similar direct and indirect

service charges as local governments may decide.

f. "Value capture" Policy. In some areas where a transit authority may come into existence, securing and holding land and real estate for future value increase would accrue to the authority for financing.

Examples of methods other cities and states have determined to be most appropriate for them are shown below. These indicate the primary, but not necessarily the only method of financing.

<u>City</u>	<u>Financing Method</u>
Atlanta	Local sales tax
Baltimore	State gasoline tax
Boston	State cigarette tax
California (state-wide aid)	Gasoline sales tax
San Francisco	Ad valorem (property)
Washington, D.C.	Ad valorem (property)

The Baltimore and Boston programs are for staged development, as proposed for Houston, while others are for immediate implementation of larger systems. California's statewide aid is allocated to all urban areas as are statewide transit aid programs which are becoming increasingly common in many other states.

Proposal

It is proposed that the state divert one-fourth of the existing 4 percent State Motor Vehicle Sales Tax to a dedicated fund for public mass transportation. Since funds generated by the tax approximates \$180 million per year, this will allow a state fund to accrue for assistance to local government and establish a base for the State mass transit function.

A State Department of Transportation should set up criteria and guidelines for local government to receive funds.

Funds for capital improvements should be matched on a 50-50 basis between states and local entities, that is, 10% state-10% local to match the 80:20 federal formula. Operating monies would likewise be matched on a 50-50 basis between state and local entities, that is, 25% state-25% local to match the 50:50 federal formula for operating funds.

The legality of diverting funds directly to cities for operating expenses will have to be interpreted. An amendment to the constitution may be required in addition to the legislative act.

Any local tax which cities or other governments may elect to use will, of course, require local elections for approval by citizens. Legislative action would be merely enabling in nature and would allow wider discretion locally.

A REGIONAL AUTHORITY

Some doubts have been expressed as to the creation of transit authorities. One particular problem mentioned is that this would be another level of government out of reach of local citizens. This problem could be eliminated if the transit authority consisted of only locally elected representatives. Any doubts as to the desirability of the perpetuation of the authority can be offset by the fact that such an authority would enable long term physical and financial planning.

Other options available for the provision of public transportation include interlocal contracting and the creation of separate systems by each local entity.

Problems inherent in an intergovernmental contracting include the complexity of resulting contracts, especially in major metropolitan areas containing a multitude of suburban cities which would result in a multitude of contracts. Also, the lack of continuity of such contracts would hinder the ability to engage in long-term planning for a more efficient transportation system. The use of intergovernmental contracts would also allow cities not to participate in an authority while its citizens continue to use its facilities. This would place an undue burden on those contracting governments.

The option of separate systems created by each governmental entity would present such problems as a lack of coordinated planning resulting in inefficient systems, the inability to fund such services by governments which lack sufficient revenue base, and the inability to obtain funding through coordinated efforts, and duplication of services.

Of the three above mentioned options, therefore, the regional transit authority in some areas could more readily attain the transportation goals

of the state. It could provide long-term coordinated planning and implementation on a regionwide scale, allow local input into the planning and implementation stages, and assure continuation of funds for construction and operation.

PROPOSAL

Enabling legislation for areawide operating authorities for transit service should be enacted. Administration of the agency would be the responsibility of the local governments.

Reasoning

1. To prevent communities and regions from being jeopardized by the deterioration or inadequate provision of public transportation facilities and services.
2. To diminish traffic congestion and its adverse effects on the environment.
3. To promote coordinated public transportation policies, planning, and systems development on a regionwide scale.
4. To conserve an ever diminishing energy supply.
5. To enhance federal funding capabilities.

Establishment

The creation of such an authority may be formed by legislative act of the state through inter-local or intra-regional agreement. This regional transportation authority would:

1. Maintain administration of the central city transit system in an administration responsive to local needs.
2. Maintain maximum control of transit service internal to each local entity through the ability to specify the level of transit service desired in each area.
3. Maintain maximum flexibility for transit services within central cities.

4. Provide accessibility benefits from an areawide transit system.
5. Provide an equitable means of distributing operating costs and subsidies through an areawide source.
6. Provide proportionate administration by the suburban areas of areawide transit system development and operation.
7. Permit maximum flexibility for transit service between cities.
8. Require support of areawide agency through citizen approval of areawide fund source.
9. Provide administration for maximum flexibility in the event of an energy crisis.

Representation

The control, policy-making and operations of the regional authority and its properties should be vested in a board composed of representatives of those cities and counties which have joined in agreement for the creation of the regional authority and the provision of its services. The representation ratio and respective voting strength shall be determined by participating members.

Power of Authority

It should be granted the right of eminent domain to acquire fee simple title to land provided such rights would be exercised in a manner which would not unduly interfere with interstate commerce or other rights which might be defined within federal or state law, and provided that the exercise of their power be performed in accordance with the goals of the authority and the character of public necessity and location.

Financing

The regional authority should have the power to raise revenue through local taxation. The type and rate should be determined by the local electorate.

The need for aggressive public transportation planning and construction is present now. The state government should assume the lead in planning, financing, constructing and coordinating public transportation activities. The major cities are becoming strangled by the multitude of expressways and resulting congestion which remove large amounts of land from more productive functions. The shift from the predominant highway emphasis to a public mass transportation emphasis should be made now.

APPENDIX A
URBAN INFLUENCE DATA

TABLE 1: TOTAL POPULATION OF TEXAS SMSA FOR SELECTED YEARS 1950, 1960 and 1970

SMSA	Total Population			Percent Change 1950 to 1970
	1950 ^a	1960 ^c	1970 ^e	
Abilene	85,517	120,377	113,959	+ 33.3
Amarillo	87,140	149,493	144,396	+ 31.3
Austin	160,908	212,136	295,516	+ 83.6
Beaumont-Port Arthur- Orange	235,650	306,016	315,943	+ 34.1
Brownsville-Harlingen- San Benito	125,170	151,098	140,368	+ 12.1
Bryan-College Station	<u>b/</u>	<u>b/</u>	57,978	-
Corpus Christi	165,471	266,594	284,832	+ 72.1
Dallas	743,501	1,119,410	1,555,950	+109.3
El Paso	194,968	314,070	359,921	+ 84.3
Fort Worth	392,643	573,215	762,086	+ 94.1
Galveston-Texas City	113,066	140,364	169,812	+ 50.2
Houston	806,701	1,418,323	1,985,031	+146.1
Laredo	56,141	64,791	72,859	+ 29.8
Lubbock	101,048	156,271	179,295	+ 77.4
McAllen-Pharr-Edinburg	<u>b/</u>	180,904	181,535	-
Midland	25,785	67,717	65,433	+153.8
Odessa	42,102	90,995	91,805	+118.1
San Angelo	58,929	64,630	71,047	+ 20.6
San Antonio	500,460	716,168	864,014	+ 72.6
Sherman-Denison	<u>b/</u>	73,043	83,225	-
Texarkana	61,966	59,971 ^d	67,813	+ 9.4
Tyler	74,701	86,340	97,096	+ 30.0
Waco	130,194	150,091	147,553	+ 13.3

TABLE 1 : TOTAL POPULATION OF TEXAS SMSA FOR SELECTED YEARS 1950,1960 and 1970--
Continued

SMSA	Total Population			Percent Change to 1950 to 1970
	1950 ^a	1960 ^c	1970 ^e	
Wichita Falls	105,309	129,638	127,621	+ 21.2
Total SMSA Percent of State	55.8	69.0	73.5	
Total State	7,711,194	9,579,677	11,196,730	+ 45.2

a/ U.S. Bureau of the Census, U.S. Census of Population: 1960, Volume 1, Characteristics of the Population. Part 45, Texas. U.S. Government Printing Office, Washington, D.C. 1963.

b/ Was not classified as an SMSA that year.

c/ 1970 Census of Population, Preliminary Reports, U.S. Department of Commerce, August 1970.

d/ Includes only the Bowie County, Texas population figure.

e/ 1970 Census of Population, Advance Report, U.S. Department of Commerce, February 1971.

TABLE 2
SMSA's AS PERCENT OF TOTAL STATE POPULATION

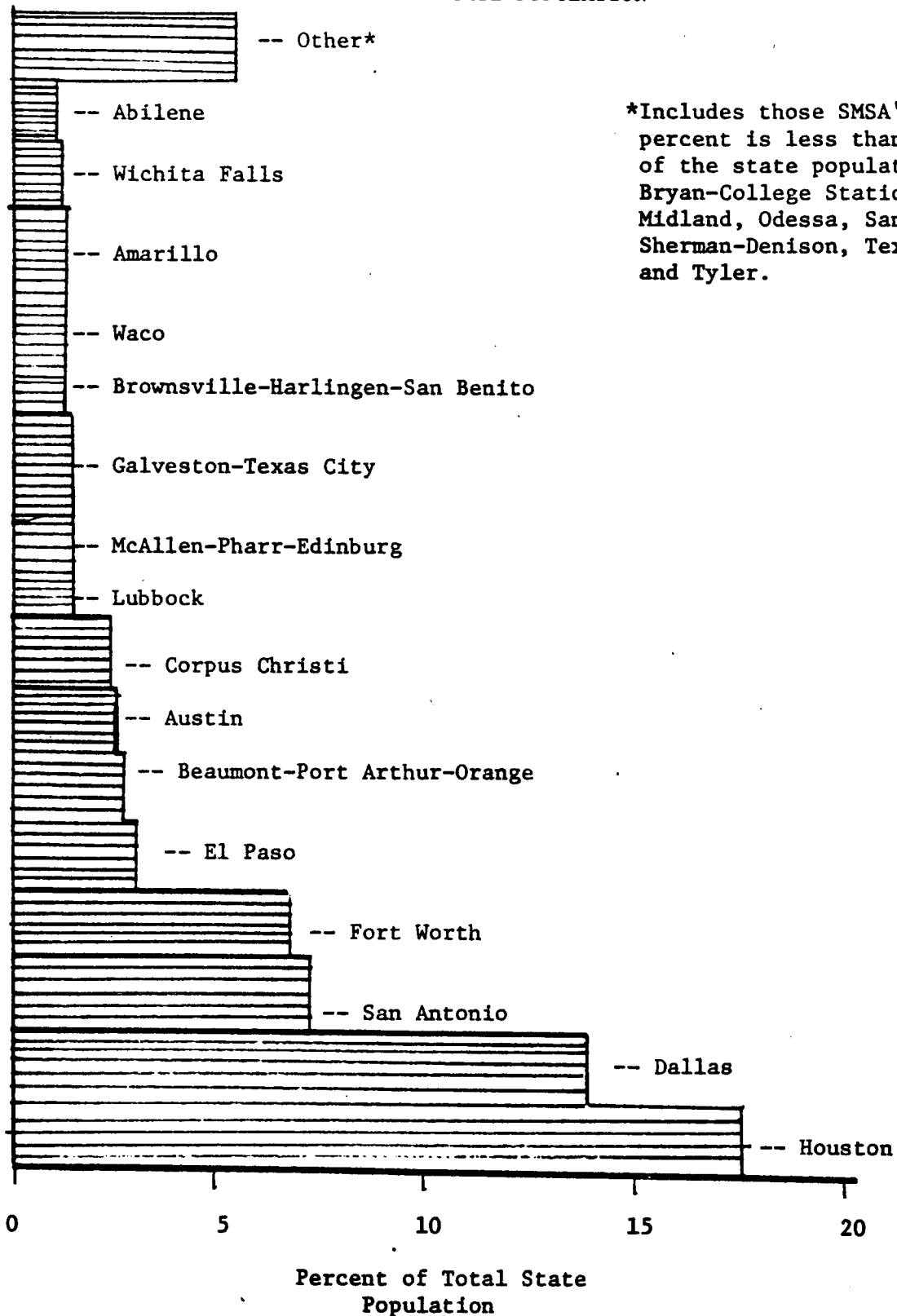


TABLE 3: TEXAS POPULATION BY PLACE OF RESIDENCE - 1930-1970^a

Year	Total	Rural		Urbanized Area	
		Number	Percent	Number	Percent
1930	5,824,715	3,435,367	58.979	2,389,348	41.021
1940	6,414,824	3,503,435	54.615	2,911,389	45.385
1950	7,711,194	3,098,528	40.182	4,612,666	59.818
1960	9,579,677	2,393,666	24.987	7,186,011	75.013
1970	11,196,730	2,275,784	20.325	8,920,946	79.675

^aU.S. Bureau of the Census, 1940, 1950, 1960 and 1970, U.S. Censuses of Population, Part 45, Texas, U.S. Government Printing Office, Washington, D.C.

TABLE 4:

Area	Population			Absolute Change	Absolute Change	Absolute Change	Absolute Change
	1950	1960	1970	1950-1960	1950-1960	1960-1970	1960-1970
United States	151,325,798	179,323,175	203,211,926	2,799,377	18.5	23,888,751	13.3
Texas	7,711,194	9,579,677	11,196,730	1,868,483	24.2	1,617,053	16.9

SOURCE: U.S. Bureau of the Census

TABLE 5

LEADING TEXAS COMMERCIAL BANKS, RANKED BY
TOTAL DEPOSITS (Dec. 1, 1972)

RANK	NAME AND LOCATION OF BANK	Total Deposits (In thousands of dollars)	Total Assets
1	Republic National Bank, Dallas	\$2,070,948	\$2,949,810
2	First National Bank, Dallas	1,965,856	2,511,083
3	First City National Bank, Houston	1,491,711	2,159,164
4	Texas Commerce Bank, National Association, Houston	1,317,754	1,708,323
5	Bank of the Southwest, National Association, Houston	823,745	993,443
6	Mercantile National Bank, Dallas	687,199	822,542
7	Fort Worth National Bank, Fort Worth	581,523	746,600
8	First National Bank, Fort Worth	568,221	744,205
9	Frost National Bank, San Antonio	496,163	596,447
10	Houston National Bank, Houston	352,593	405,640
11	National Bank of Commerce, San Antonio	340,789	419,436
12	El Paso National Bank, El Paso	297,079	326,452
13	National Bank of Commerce, El Paso	291,912	345,848
14	Austin National Bank, Austin	286,552	330,229
15	State National Bank, El Paso	274,913	314,715
16	Capital National Bank, Austin	266,397	307,242
17	Texas Bank and Trust Co., Dallas	255,174	295,885
18	Houston Citizens Bank and Trust, Houston	245,825	302,602
19	Corpus Christi National Bank, Corpus Christi	235,219	297,865
20	Continental National Bank, Fort Worth	223,897	271,490

SOURCE: Federal Reserve Bank of Dallas

TABLE 6

STANDARD METROPOLITAN STATISTICAL AREAS IN TEXAS
NEW AND EXPANDED PLANTS
January-December 1971

SMSA	New Plants	Expansion	Total
Total within SMSA's	220	146	366
Total outside SMSA's	122	79	201
Total State of Texas	342	225	567
Percent in SMSA's	64.33	64.89	64.55
Percent outside of SMSA's	35.67	35.11	35.45

SOURCE: Bureau of Business Research, The University of Texas at Austin.

STANDARD METROPOLITAN STATISTICAL AREAS IN TEXAS
NEW AND EXPANDED PLANTS
January-December 1972

SMSA	New Plants	Expansion	Total
Total within SMSA's	208	202	410
Total outside SMSA's	148	114	262
Total State of Texas	356	316	672
Percent in SMSA's	58.43	63.92	61.01
Percent outside SMSA's	41.57	36.08	38.99

SOURCE: Bureau of Business Research, The University of Texas at Austin

STANDARD METROPOLITAN STATISTICAL AREAS IN TEXAS
NEW AND EXPANDED PLANTS
January-September 1973

SMSA	New Plants	Expansion	Total
Total within SMSA's	169	194	343
Total outside SMSA's	113	65	178
Total State of Texas	282	259	521
Percent in SMSA's	59.93	74.90	65.83
Percent outside SMSA's	40.07	25.10	34.17

SOURCE: Bureau of Business Research, The University of Texas at Austin.

TABLE 7

STANDARD METROPOLITAN STATISTICAL AREAS IN TEXAS
NEW AND EXPANDED PLANTS
January-June 1974

SMSA	New Plants	Expansion	Total
Abilene	3	2	5
Amarillo	2	3	5
Austin	1	0	1
Beaumont-Port Arthur-Orange	4	5	9
Brownsville-Harlingen-San Benito	2	6	8
Bryan-College Station	0	0	0
Corpus Christi	1	7	8
Dallas-Fort Worth	20	26	46
El Paso	5	6	11
Galveston-Texas City	1	0	1
Houston	56	57	113
Killeen-Temple	0	0	0
Laredo	1	1	2
Lubbock	3	4	7
McAllen-Pharr-Edinburg	3	6	9
Midland	0	0	0
Odessa	0	0	0
San Angelo	0	5	5
San Antonio	1	8	9
Sherman-Denison	1	1	2
Texarkana	0	0	0
Tyler	6	0	6
Waco	0	0	0
Wichita Falls	1	2	3
TOTAL WITHIN SMSA'S	111	139	250
TOTAL OUTSIDE SMSA'S	46	42	88
TOTAL STATE OF TEXAS	157	181	338
PERCENT IN SMSA'S	70.70	76.80	73.96
PERCENT OUTSIDE SMSA'S	29.30	23.20	26.04

SOURCE: Bureau of Business Research, The University of Texas at Austin.

TABLE 8

POPULATION PROJECTIONS FOR 1973

1. Abilene, Jones-Taylor Counties

1970 metro pop.	113,959
1973 metro est.	117,900
2. Amarillo, Potter-Randall Counties

1970 metro pop.	144,396
1973 metro est.	145,100
3. Austin, Travis County

1970 metro pop.	295,516
1973 est.	336,100
4. Beaumont, Jefferson County

1970 metro pop.	315,943
1973 metro est.	321,800
5. Brownsville-Harlingen-San Benito (Cameron County)

1970 metro pop.	140,368
1973 metro est.	139,800
6. Bryan-College Station, Brazos County

1970 metro pop.	57,978
1973 metro est.	62,700
7. Corpus Christi, Neuces County

1970 metro pop.	284,832
1973 metro est.	297,500
8. Dallas, Dallas County

1970 metro pop.	1,555,950
1973 metro est.	1,675,200
9. El Paso, El Paso County

1970 metro pop.	359,291
1973 metro est.	372,200
10. Fort Worth, Tarrant County

1970 metro pop.	762,086
1973 metro est.	806,800

In 1973, the D-FW SMSA;s were combined and Hood, Parker and Wise Counties were added. The combined population estimate for 1973 was 2,536,900.
11. Galveston-Texas City, Galveston County

1970 metro pop.	169,812
1973 metro est.	181,700
12. Houston, Fort Bend-Harris-Montgomery Counties

1970 metro pop.	1,985,031
1973 metro est.	2,140,000

Table 8--Continued

In 1973, Waller County was added to Houston's SMSA. Population in 1973 including Waller County est. 2,156,300.

13. Killeen-Temple, Bell County
 1970 metro pop. 159,794
 1973 metro est. 174,600

14. Laredo, Webb County
 1970 metro pop. 72,859
 1973 metro est. 75,700

15. Longview, Gregg County

16. Lubbock, Lubbock County
 1970 metro pop. 179,295
 1973 metro est. 180,800

17. McAllen-Pharr-Edinburg, Hidalgo County
 1970 metro pop. 181,535
 1973 metro est. 182,600

18. Midland, Midland County
 1970 metro popl. 65,433
 1973 metro est. 64,900

19. Odessa, Ector County
 1970 metro pop. 91,805
 1973 metro est. 94,600

20. San Angelo, Tom Green County
 1970 metro pop. 71,047
 1973 metro est. 69,900

21. San Antonio, Bexar County
 1970 metro pop. 864,014
 1973 metro est. 912,700

In 1973, Comal County was added to San Antonio's metro area, population including Comal 1973 est. of 938,500.

22. Sherman-Denison, Grayson County
 1970 metro pop. 83,225
 1973 metro est. 85,500

23. Texarkana, Bowie County
 1970 metro pop. 101,198
 1973 metro est. 102,535

In 1973, Little River Co., Ark. was added to SMSA, including Little River, 1973 pop. est. 114,072.

24. Tyler, Smith County
 1970 metro pop. 97,096
 1973 metro est. 101,700

Table 8--Continued

25. Waco, McLennan County .

1970 metro. pop. 147,553

1973 metro est. 150,700

26. Wichita Falls, Wichita County

1970 metro pop. 127,621

1973 metro est. 131,500

In 1973 Archer County was deleted from the Wichita Falls SMSA and Clay County was added. With this adjustment, the 1973 est. pop. for SMSA is 134,300.

SOURCE: Sales Management, Survey of Buying Income, December 31, 1972.

TABLE 9

CULTURAL ASPECTS OF TEXAS METRO AREAS

Symphony Orchestra

Classified by American Symphony Orchestra League

- A. Major, budget exceeds \$500,000 yearly
- B. Metropolitan, \$100,000-\$500,000 budget
- C. Urban, \$50,000-\$100,000 budget
- D. Community, budget under \$50,000

Class A

- 1. Dallas Symphony Orchestra
- 2. Houston Symphony Orchestra
- 3. San Antonio Symphony Orchestra

Class B

- 4. Amarillo Symphony Orchestra
- 5. Austin Symphony Orchestra
- 6. Corpus Christi Symphony Orchestra
- 7. El Paso Symphony Orchestra
- 8. Fort Worth Symphony Orchestra
- 9. Midland-Odessa Symphony and Chorale

Class C

- 10. Abilene Philharmonic Association, Inc.
- 11. Lubbock Symphony Orchestra
- 12. Wichita Falls Symphony Orchestra

Class D

- 13. Abilene Christian College Symphony Orchestra
- 14. Beaumont Symphony Orchestra
- 15. Dallas Civic Symphony - SMU
- 16. East Texas Symphony Orchestra - Tyler
- 17. Houston Youth Symphony and Ballet Orchestra
- 18. Irving Symphony Orchestra
- 19. Lamar Philharmonic Orchestra - Beaumont
- 20. Longview Symphony
- 21. Pan American University Valley Symphony - Edinburg
- 22. Richardson Symphony Orchestra
- 23. San Angelo Symphony Orchestra
- 24. Sherman Symphony Orchestra
- 25. Southern Methodist University Chamber Orchestra
- 26. Texas Christian University Symphony
- 27. Waco Symphony Orchestra

Table 9--Continued

Opera Companies

1. Beaumont Civic Opera
2. Dallas Civic Opera
3. El Paso University - Civic Opera
4. Fort Worth Opera Association
5. Houston Grand Opera Association
6. San Antonio Grand Opera Festival

Ballet

1. Fort Worth Ballet Association
2. Greater Houston Civic Ballet
3. Houston Allegro Ballet
4. Wichita Falls Ballet Theatre
5. Dallas Civic Ballet
6. Dallas Metropolitan Ballet
7. Dallas Ballet Theatre
8. Ballet Theatre on the Bay, Texas City
9. Ballet Concerto, Fort Worth
10. Amarillo Ballet Theatre

APPENDIX B

METROPOLITAN INTERACTION LEVELS

ABILENE

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	97,853	97,853	-	128,030
Area (square miles)	912	1,812	-	13,027
Density	107.3	13.4	-	9.8
Population change, 1960-1970:				
Absolute	-3,225	-2,917	-	-22,546
Percent	- 3.2	- 10.7	-	- 15.0
Percent rural	7.2	55.7	-	48.1
Median age	25.8	40.1	-	38.7
Total retail sales, 1972 (thousands)	294,528	30,739	-	236,017
Percent of total labor force in the armed services	11.7	-	-	.2
Percent of labor force commutes to metropolitan county	-	15-75	-	-

AMARILLO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	90,511	53,885	4,153	242,347
Area (square miles)	898	914	2,385	24,786
Density	100.8	59.0	1.7	9.8
Population change 1960-1970:				
Absolute	-25,069	19,972	259	-19,053
Percent	- 21.7	58.9	6.7	- 7.3
Percent rural	4.5	9.3	100.0	41.1
Median age	28.4	24.8	30.0	28.8
Total retail sales, 1972 (thousands)	317,784	77,791	10,171	628,098
Percent of the labor force commutes to the metropolitan county	-	15-75	5-14.9	-

AUSTIN

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	295,516	82,244	32,598	16,811
Area (square miles)	1,012	2,644	1,540	1,938
Density	292.0	19.4	21.2	21.2
Population change, 1960-1970:				
Absolute	83,380	10,341	6,111	794
Percent	39.3	14.4	23.1	5.0
Percent rural	10.5	42.1	56.8	67.9
Percent under 18	32.0	31.8	34.0	26.5
Percent over 65	7.0	13.8	15.9	21.1
Median age	24.2	26.9	30.6	45.6
Total retail sales, 1972 (thousands)	668,952	128,744	49,127	40,412
Percent of labor force commutes to the metro- politan county	-	15-75	5-14.9	-

BEAUMONT-PORT ARTHUR-ORANGE

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	244,773	101,166	48,766	7,187
Area (square miles)	951	1,256	2,775	456
Density	257.4	80.5	17.6	15.8
Population change, 1960-1970:				
Absolute	- 886	16,180	5,628	- 115
Percent	- 0.4	19.0	13.0	- 1.6
Percent rural	5.1	45.8	81.7	100.0
Percent 18 and under	35.2	38.6	36.3	34.0
Percent 65 and older	8.6	7.0	13.4	14.9
Median age	28.1	26.1	30.6	33.0
Total retail sales, 1972 (thousands)	494,566	183,797	61,075	11,832
Percent of labor force commutes to the metro- politan county	-	15-75	5-14.9	-

BIG SPRING

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population:1970	37,796	-	4,430	-
Area (square miles)	911	-	2,225	-
Density	41.5	-	2.0	-
Population change, 1960-1970:				
Absolute	- 2,343	-	-2,832	-
Percent	- 5.8	-	- 39.0	-
Percent rural	24.0	-	100.0	-
Percent under 18	34.4	-	39.5	-
Percent 65 and older	8.3	-	8.4	-
Median age	26.9	-	27.3	-
Total retail sales, 1972 (thousands)	81,704	-	6,353	-
Percent of labor force commutes to the metro- politan county	-	-	5-14.9	-

BROWNSVILLE-HARLINGEN-SAN BENITO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	140,368	-	15,570	-
Area (square miles)	896	-	591	-
Density	156.7	-	26.3	-
Population change, 1960-1970:				
Absolute	-11,270	-	-4,514	-
Percent	- 7.1	-	- 22.5	-
Percent rural	23.5	-	48.7	-
Percent under 18	43.2	-	44.1	-
Percent 65 and over	8.5	-	8.5	-
Median age	22.2	-	21.2	-
Total retail sales, 1972 (thousands)	299,933	-	21,539	-
Percent of labor force commutes to the metro- politan county	-	-	5-14.9	-

BRYAN-COLLEGE STATION

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	57,978	9,999	14,389	-
Area (square miles)	586	670	877	-
Density	98.9	14.9	16.4	-
Population change, 1960-1970:				
Absolute	13,083	-1,178	-1,768	-
Percent	29.1	- 10.5	- 10.9	-
Percent rural	11.4	100.0	65.4	-
Percent under 18	31.2	32.1	32.2	-
Percent 65 and over	7.7	18.4	18.4	-
Median age	23.3	37.1	35.8	-
Total retail sales, 1972 (thousands)	128,103	10,687	24,560	-
Percent of labor force commutes to the metro- politan county	-	15-75	5-14.9	-

CORPUS CHRISTI

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	237,544	47,288	66,198	83,918
Area (square miles)	841	685	1,696	9,285
Density	282.5	69.0	39.0	9.0
Population change, 1960-1970:				
Absolute	15,971	2,267	1,598	-4,342
Percent	7.2	5.0	2.5	- 4.9
Percent rural	6.0	35.8	20.2	49.6
Percent under 18	39.3	42.4	37.1	38.3
Percent 65 and over	6.3	7.1	6.7	9.7
Median age	23.4	23.2	23.0	25.6
Total retail sales, 1972 (thousands)	488,319	97,865	135,490	122,196
Percent of labor force commutes to the metro- politan county	-	15-75	5-14.9	-

DALLAS

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	1,327,321	228,629	87,088	146,030
Area (square miles)	859	3,649	2,352	5,165
Density	1,545.2	62.7	37.0	28.3
Population change, 1960-1970:				
Absolute	375,974	60,746	14,712	23,461
Percent	39.5	36.2	20.3	19.1
Percent rural	1.0	41.4	55.2	45.6
Percent under 18	36.0	33.1	29.9	30.6
Percent 65 and over	6.6	10.6	14.7	17.4
Median age	26.3	26.7	31.8	36.1
Total retail sales, 1972 (thousands)	3,313,195	473,097	164,469	293,367
Percent of labor force commutes to the metro- politan county	-	15-75	5-14.9	-

EL PASO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	359,291	-	-	200,193
Area (square miles)	1,057	-	-	35,987
Density	339.9	-	-	5.9
Population change, 1960-1970:				
Absolute	45,221	-	-	9,592
Percent	14.4	-	-	5.0
Percent rural	4.0	-	-	14.1
Percent under 18	40.7	-	-	39.8
Percent 65 and over	5.7	-	-	6.6
Median age	22.7	-	-	23.5
Total retail sales, 1972 (thousands)	720,173	-	-	377,956

FORT WORTH

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	716,317	105,712	-	98,453
Area (square miles)	861	2,991	-	6,508
Density	832.0	832.0	-	15.1
Population change, 1960-1970:				
Absolute	177,822	25,657	-	-575
Percent	33.0	25.0	-	-0.6
Percent rural	3.2	56.6	-	36.7
Percent under 18	35.4	32.2	-	31.2
Percent 65 and over	7.3	12.8	-	18.4
Median age	26.5	30.1	-	30.0
Total retail sales, 1972 (thousands)	1,469,575	236,121	-	219,997
Percent of labor force commutes to metropolitan county	-	15-75	-	-

GALVESTON

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	169,812	-	-	-
Area (square miles)	399	-	-	-
Density	425.6	-	-	-
Population change, 1960-1970:				
Absolute	29,448	-	-	-
Percent	21.0	-	-	-
Percent rural	10.6	-	-	-
Percent under 18	36.2	-	-	-
Percent 65 and over	7.6	-	-	-
Total retail sales, 1972 (thousands)	406,734	-	-	-

HOUSTON

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	1,741,912	276,293	41,511	302,493
Area (square miles)	1,723	6,311	1,453	13,587
Density	1,011.0	43.8	19.4	3.7
Population change, 1960-1970:				
Absolute	498,754	72,525	6,259	10,711
Percent	40.1	35.6	19.4	3.7
Percent rural	4.5	54.3	51.1	56.4
Percent under 18	37.0	37.5	23.3	32.8
Percent 65 and over	5.9	7.7	12.4	14.2
Median age	25.7	26.2	28.5	30.6
Total retail sales, 1972 (thousands)	4,112,664	478,950	87,946	622,785
Percent of labor force commutes to metro- politan county	-	15-75	5-14.9	-

KILLEEN

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	124,483	44,634	-	-
Area (square miles)	1,047	1,769	-	-
Density	118.9	25.2	-	-
Population change, 1960- 1970:				
Absolute	30,386	11,255	-	-
Percent	32.3	33.7	-	-
Percent rural	15.2	32.1	-	-
Percent under 18	30.9	29.8	-	-
Percent 65 and over	7.0	9.1	-	-
Median age	23.4	23.3	-	-
Total retail sales, 1975 (thousands)	281,942	71,617	-	-
Percent of labor force commutes to metro- politan county	-	15-75	-	-

LAREDO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	72,859	-	-	2,176
Area (square miles)	3,306	-	-	478
Density	22.0	-	-	4.5
Population change, 1960-1970:				
Absolute	8,068	-	-	-41
Percent	12.5	-	-	12.5
Percent rural	3.7	-	-	100.0
Percent under 18	42.8	-	-	38.3
Percent 65 and over	8.0	-	-	13.1
Median age	21.9	-	-	21.3
Total retail sales, 1972 (thousands)	212,670	-	-	1,845

LONGVIEW-MARSHALL

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	75,929	34,102	85,970	-
Area (square miles)	282	939	2,537	-
Density	269.3	36.3	33.9	-
Population change, 1960-1970:				
Absolute	6,493	-2,319	-312	-
Percent	9.4	-6.4	-0.4	-
Percent rural	24.8	63.6	59.0	-
Percent under 18	33.7	30.9	33.5	-
Percent 65 and over	10.3	17.0	14.1	-
Median age	29.3	37.1	31.6	-
Total retail sales, 1972 (thousands)	243,369	60,035	108,613	-

LUBBOCK

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	179,295	-	9,107	211,040
Area (square miles)	893	-	915	18,614
Density	200.8	-	10.0	11.3
Population change, 1960-1970:				
Absolute	23,024	-	-1,807	-23,137
Percent	14.7	-	-16.6	-9.9
Percent rural	10.8	-	67.5	58.1
Percent under 18	35.5	-	39.7	38.5
Percent 65 and over	6.3	-	10.8	8.9
Median age	23.5	-	27.5	26.6
Total retail sales, 1972 (thousands)	400,193	-	11,427	477,781
Percent of labor force commutes to metropolitan county	-	-	5-14.9	-

MCALLEN-PHARR-EDINBURG

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	181,535	-	-	8,854
Area (square miles)	1,543	-	-	605
Density	117.7	-	-	14.6
Population change, 1960-1970:				
Absolute	631	-	-	570
Percent	0.3	-	-	3.3
Percent rural	25.9	-	-	67.9
Percent under 18	43.9	-	-	44.6
Percent 65 and over	7.8	-	-	8.0
Median age	21.2	-	-	21.3
Total retail sales, 1972 (thousands)	312,987	-	-	10,778

MIDLAND

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	65,433	-	2,387	-
Area (square miles)	939	-	456	-
Density	69.7	-	5.2	-
Population change, 1960-1970:				
Absolute	-2,274	-	-147	-
Percent	-3.4	-	-5.8	-
Percent rural	7.7	-	100.0	-
Percent under 18	39.3	-	39.5	-
Percent 65 and over	5.2	-	9.1	-
Median age	27.0	-	26.6	-
Total retail sales, 1972 (thousands)	154,653	-	5,623	-
Percent of labor force commutes to metropolitan county	-	-	5-14.9	-

ODESSA

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	91,805	-	-	80,138
Area (square miles)	907	-	-	11,941
Density	101.2	-	-	6.7
Population change, 1960-1970:				
Absolute	810	-	-	-11,962
Percent	0.9	-	-	-13.0
Percent rural	11.1	-	-	24.9
Percent under 18	38.5	-	-	39.2
Percent 65 and over	4.7	-	-	6.1
Median age	25.7	-	-	26.2
Total retail sales, 1972 (thousands)	244,961	-	-	150,546

SAN ANGELO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	71,047	1,070	-	81,970
Area (square miles)	1,500	1,073	-	33,117
Density	47.4	1.0	-	2.5
Population change, 1960-1970:				
Absolute	6,417	-113	-	-6,907
Percent	9.9	9.9	-	-7.8
Percent rural	10.1	100.0	-	55.7
Percent under 18	33.0	30.7	-	34.5
Percent 65 and over	10.7	17.6	-	13.4
Median age	27.5	36.2	-	26.8
Total retail sales, 1972 (thousands)	162,465	940	-	162,148
Percent of labor force commutes to metropolitan county	-	15-75	-	-

SAN ANTONIO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	830,460	121,416	-	166,235
Area (square miles)	1,246	6,074	-	18,872
Density	666.5	20.0	-	8.8
Population change, 1960-1970:				
Absolute	143,309	11,775	-	4,415
Percent	20.9	10.7	-	2.7
Percent rural	5.1	51.6	-	37.3
Percent under 18	37.8	35.4	-	38.0
Percent 65 and over	7.5	12.5	-	12.4
Median age	24.1	29.9	-	26.7
Total retail sales, 1972 (thousands)	1,567,935	204,062	-	317,887
Percent of labor force commutes to metropolitan county	-	15-75	-	-

SHERMAN-DENISON

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	83,225	25,552	22,705	-
Area (square miles)	940	889	905	-
Density	88.5	28.7	25.1	-
Population change, 1960-1970:				
Absolute	10,182	10,182	-1,105	-
Percent	13.9	13.9	-4.9	-
Percent rural	30.0	30.0	66.1	-
Percent under 18	31.9	28.6	27.5	-
Percent 65 and over	13.2	16.4	20.5	-
Median age	30.4	33.5	42.0	-
Total retail sales, 1972 (thousands)	203,517	203,517	31,588	-
Percent of labor force commutes to metropolitan county	-	15-75	-	-

TEXARKANA

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	67,813	44,479	50,741	16,281
Area (square miles)	891	1,109	2,234	782
Density	76.1	40.1	22.7	20.8
Population change, 1960-1970:				
Absolute	7,842	3,582	-1,013	610
Percent	13.1	8.8	-2.0	3.9
Percent rural	36.4	43.3	78.4	76.3
Percent under 18	33.9	35.3	32.8	28.2
Percent 65 and over	11.5	12.0	15.8	12.5
Median age	29.7	28.5	34.3	31.9
Total retail sales, 1972 (thousands)	156,081	98,804	74,478	23,540
Percent of labor force commutes to metropolitan county	-	15-75	5-14.9	-

TYLER

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	97,096	-	31,822	45,903
Area (square miles)	934	-	1,293	1,585
Density	104.0	-	24.6	29.0
Population change, 1960-1970:				
Absolute	10,746	-	3,276	-1,298
Percent	12.4	-	11.5	-2.7
Percent rural	38.4	-	65.7	52.3
Percent under 18	34.0	-	29.4	29.4
Percent 65 and over	11.1	-	17.3	16.7
Median age	29.4	-	37.9	37.6
Total retail sales, 1972 (thousands)	215,645	-	63,740	88,036
Percent of labor force commutes to metropolitan county	-	-	5-14.9	-

VICTORIA

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	53,766	-	4,869	45,443
Area (square miles)	892	-	871	1,925
Density	60.3	-	5.6	23.6
Population change, 1960-1970:				
Absolute	7,291	-	-560	-1,919
Percent	15.7	-	-10.3	-4.1
Percent rural	23.1	-	100.0	49.6
Percent under 18	39.3	-	34.0	35.1
Percent 65 and over	7.2	-	15.7	14.0
Median age	25.0	-	34.3	31.4
Total retail sales, 1972 (thousands)	117,570	-	6,883	83,744
Percent of labor force commutes to metropolitan county	-	-	5-14.9	-

WACO

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	147,553	-	50,862	23,658
Area (square miles)	1,000	-	2,764	1,364
Density	147.6	-	18.4	17.3
Population change, 1960-1970:				
Absolute	-2,538	-	-4,860	-3,017
Percent	-1.7	-	-8.7	-11.3
Percent rural	16.5	-	68.2	68.8
Percent under 18	31.4	-	28.0	27.1
Percent 65 and over	12.4	-	20.9	20.5
Median age	30.5	-	42.5	41.0
Total retail sales, 1972 (thousands)	349,294	-	92,891	40,995
Percent of labor force commutes to metropolitan county	-	-	5-14.9	-

WICHITA FALLS

Variables	Interaction levels			
	Primary	Secondary	Tertiary	Quaternary
Population: 1970	121,862	13,838	-	60,216
Area (square miles)	611	2,015	-	6,705
Density	199.4	6.9	-	9.0
Population change, 1960-1970:				
Absolute	-1,666	- 623	-	-8,146
Percent	-1.3	-4.3	-	-11.9
Percent rural	4.4	79.1	-	41.7
Percent under 18	32.4	30.9	-	28.7
Percent 65 and over	9.7	16.1	-	18.9
Median age	26.5	36.4	-	40.8
Total retail sales, 1972 (thousands)	328,903	25,420	-	127,296
Percent of labor force commutes to metropolitan county	-	15-75	-	-

ABILENE

Primary level

Taylor

Secondary level

Callahan

Jones

Tertiary level

- -

Quaternary level

Brown (50%)

Coleman

Eastland

Fisher

Haskell

Kent

Knox

Mills (50%)

Mitchell

Nolan

Runnels (50%)

Scurry

Shackelford

Stephens

Stonewall

Throckmorton (50%)

AMARILLO

Primary level

Potter

Secondary level

Randall

Tertiary level

Armstrong

Oldham

Quaternary level

Briscoe

Carson

Castro (50%)

Childress (50%)

Cimarron, Oklahoma

Collingsworth

Curry, New Mexico

Dallam

Deaf Smith

Donley

Gray

Hall

Hansford

Hartley

Hemphill

Hutchinson

Lipscomb

Moore

Ochiltree

Parmer (50%)

Quay, New Mexico

Roberts

Roosevelt, New Mexico (50%)

Sherman

Swisher

Union, New Mexico

Wheeler

AUSTIN

Primary level

Travis

Secondary level

Bastrop

Hays

Williamson

Tertiary level

Burnet

Caldwell

Quaternary level

Blanco (50%)

Lee

Llano

BEAUMONT-PORT ARTHUR-ORANGE

Primary level

Jefferson

Secondary level

Hardin

Orange

Tertiary level

Jasper

Newton

Tyler

Quaternary level

Sabine

BIG SPRING

Primary level

Howard

Secondary level

- -

Tertiary level
Borden
Glasscock
Martin (50%)
Quaternary level

- -

BROWNSVILLE-HARLINGEN-SAN BENITO
Primary level
Cameron
Secondary level

- -

Tertiary level
Willacy
Quaternary level

- -

BRYAN-COLLEGE STATION
Primary level
Brazos
Secondary level
Burleson
Tertiary level
Robertson
Quaternary level

- -

CORPUS CHRISTI
Primary level
Nueces
Secondary level
San Patricio
Tertiary level
Jim Wells
Kleberg
Quaternary level
Aransas
Bee
Brooks
Duval
Jim Hogg
Kenedy
Live Oak
Refugio
Starr (50%)
Zapata (50%)

DALLAS
Primary level
Dallas
Secondary level
Collin
Denton
Ellis
Kaufman
Rockwall
Tertiary level
Henderson (50%)
Hunt
Rains
Van Zandt
Quaternary level
Anderson (50%)
Cooke (50%)
Delta
Franklin
Freestone (50%)
Hopkins
Lamar
Navarro
Titus

EL PASO
Primary level
El Paso
Secondary level

- -
Tertiary level

- -
Quaternary level
Culberson
Dona Ana, New Mexico
Eddy, New Mexico
Grant, New Mexico
Hidalgo, New Mexico
Hudspeth
Jeff Davis (33 1/3 %)
Luna, New Mexico
Otero, New Mexico
Presidio (50%)

FORT WORTH
Primary level
Tarrant

Secondary level

Hood

Johnson

Parker

Wise

Tertiary level

Somervell

Quaternary level

Brown (50%)

Comanche

Cooke (50%)

Erath

Hamilton

Jack

Mills (50%)

Palo Pinto

Young (50%)

GALVESTON-TEXAS CITY

Primary level

Galveston

Secondary level

- -

Tertiary level

- -

Quaternary level

- -

HOUSTON

Primary level

Harris

Secondary level

Brazoria

Chambers

Fort Bend

Liberty

Montgomery

San Jacinto

Waller

Tertiary level

Austin

Walker

Quaternary level

Angelina

Colorado

Fayette

Grimes

Houston

Jackson

Lavaca (50%)

Leon

Madison

Matagorda

Nacogdoches

Polk

San Augustine

Trinity

Washington

Wharton

KILEEN-TEMPLE

Primary level

Bell

Secondary level

Coryell

Lampasas

Tertiary level

- -

Quaternary level

Milam

LAREDO

Primary level

Webb

Secondary level

- -

Tertiary level

- -

Quaternary level

Zapata (50%)

LONGVIEW-MARSHALL

Primary level

Gregg

Secondary level

Rusk

Tertiary level

Harrison

Marion (50%)

Panola

Upshur

Quaternary level

Camp

LUBBOCK

Primary level

Lubbock

Secondary level

- -

Tertiary level

Lynn

Quaternary level

Bailey

Castro (50%)

Cochran

Crosby

Dawson

Dickens

Floyd

Gaines

Garza

Hale

Hockley

King

Lamb

Lea, New Mexico (50%)

Motley

Parmer (50%)

Roosevelt, New Mexico (50%)

Terry

Yoakum

McALLEN-PHARR-EDINBURG

Primary level

Hidalgo

Secondary level

- -

Tertiary level

- -

Quaternary level

Starr (50%)

MIDLAND

Primary level

Midland

Secondary level

- -

Tertiary level

Martin (50%)

Quaternary level

- -

ODESSA

Primary level

Ector

Secondary level

- -

Tertiary level

- -

Quaternary level

Andrews

Crane

Jeff Davis (33 1/3%)

Lea, New Mexico (50%)

Loving

Pecos (50%)

Reeves (50%)

Upton (50%)

Ward

Winkler

SAN ANGELO

Primary level

Tom Green

Secondary level

Irion

Tertiary level

- -

Quaternary level

Brewster

Coke

Concho

Crockett

Edwards

Jeff Davis (33 1/3%)

Kimble

McCulloch

Mason

Menard

Pecos (50%)

Presidio (50%)

Reagan

Reeves (50%)

Runnels (50%)

San Saba

Schleicher

Sterling

Sutton

Terrell

Upton (50%)

SAN ANTONIO

Primary level

Bexar

Secondary level

Atascosa

Bandera

Comal

Guadalupe

Kendall

Medina

Wilson

Tertiary level

- -

Quaternary level

Blanco (50%)

Dimmit

Frio

Gillespie

Gonzales

Karnes

Kerr

Kinney

LaSalle

McMullen

Maverick

Real

Uvalde

Val Verde

Zavala

SHERMAN-DENISON

Primary level

Grayson

Secondary level

Bryan, Oklahoma

Tertiary level

Fannin

Quaternary level

- -

TEXARKANA

Primary level

Bowie

Secondary level

Little River, Arkansas

Miller, Arkansas

Tertiary level

Cass

Morris

Red River

Quaternary level

Lafayette, Arkansas (50%)

Sevier, Arkansas

TYLER

Primary level

Smith

Secondary level

- -

Tertiary level

Henderson (50%)

Wood

Quaternary level

Anderson (50%)

Cherokee

VICTORIA

Primary level

Victoria

Secondary level

- -

Tertiary level

Goliad

Quaternary level

Calhoun

DeWitt

Lavaca (50%)

WACO

Primary level

McLennan

Secondary level

- -

Tertiary level

Bosque

Falls

Hill

Quaternary level

Freestone (50%)

Limestone

WICHITA FALLS

Primary level

Wichita

Secondary level

Archer

Clay

Tertiary level

--

Quaternary level

Baylor

Childress (50%)

Cottle

Foard

Hardeman

Montague

Throckmorton (50%)

Wilbarger

Young (50%)

APPENDIX C

TAX STUDY

TABLE 1: State and Urban County Revenue Data for Fiscal 1963, 1970 and 1972

	Population 1960 Other 1963	1970	Change 1960(63)-1970	% Change	1972	Change 1970-1972	% Change
STATE POPULATION	9,579,677	11,196,730	1,617,053	16.9	11,749,100	552,370	4.9
8 Urban Counties Population	4,413,769	5,573,134	1,339,365	30.3	6,140,400	387,266	6.7
7 State Tax Collections	685,157,068	1,404,761,847	719,604,779	105.0	1,915,047,190	510,285,343	36.3
8 Urban County Share of 7 State Taxes	356,710,002	804,480,734	447,770,632	126.0	1,136,167,785	331,687,785	41.2
8 Urban County % of 7 State Taxes	52.1	57.3			49.3		

1963-1970 State 7 Tax Revenue increase = \$719,604,779

1963-1970 8 County 7 Tax Revenue increase = \$447,770,632
% of state increase = 62.2

1970-72 State of Tax Revenue increase = \$510,285,343

1970-72 8 County 7 Tax Revenue increase = \$331,687,151
% of state increase = 65.0

TABLE 2 : Fiscal 1972 Eight Urban County Revenue and Percents of Seven Selected State Taxes

County	Ad Valorem Tax	%	Limited Sales Tax	%	Est. Cig. Sales Tax	%	Motor Veh. Reg. Fees	%	Est. Motor Fuels Tax	%
Harris	\$11,265,449	18.2	\$206,923,695	23.4	\$45,063,664	19.4	\$29,751,361	18.3	\$51,438,124	15.8
Dallas	7,172,781	11.6	153,198,364	17.3	36,469,048	15.7	24,959,609	15.1	40,043,603	12.3
Tarrant	2,539,637	4.1	57,678,988	6.5	17,189,232	7.4	12,231,528	7.4	21,812,369	6.7
Bexar	1,951,451	3.1	60,480,348	6.8	16,027,798	6.9	11,221,743	6.8	21,161,253	6.5
El Paso	986,989	1.6	23,684,459	2.7	6,039,460	2.6	4,599,291	2.8	8,790,059	2.7
Travis	1,335,158	2.2	27,399,662	3.1	6,968,608	3.0	4,697,273	2.8	8,464,502	2.6
Jefferson	1,353,133	2.2	18,903,894	2.1	5,110,312	2.2	3,546,639	2.2	6,836,713	2.1
Nueces	1,548,165	2.5	19,989,200	2.3	4,413,452	1.9	3,800,610	2.3	6,511,155	2.0
TOTALS	28,152,763	45.4	568,258,610	64.3	137,281,574	59.1	94,808,054	57.5	165,057,778	50.7
STATE TOTALS	62,000,265		883,651,639		232,286,927		164,957,456		325,557,752	

County	Est. Alcoholic Bev. Tax	%	Total Est. Taxes	%	Motor Veh. Sales Tax	%	Total All Taxes	%
Harris	\$15,358,701	19.4	\$359,800,994	20.5	\$32,022,774	19.1	\$391,823,768	20.5
Dallas	12,429,464	15.7	274,272,869	15.7	24,729,644	14.8	299,002,513	15.6
Tarrant	5,858,474	7.4	117,310,228	6.7	11,462,124	6.8	128,772,352	6.7
Bexar	5,462,631	6.9	116,305,224	6.6	11,084,132	6.6	127,389,356	6.6
El Paso	2,058,383	2.6	46,158,641	2.6	4,334,513	2.6	50,493,154	2.6
Travis	2,375,057	3.0	51,240,260	2.9	5,193,893	3.1	56,434,153	2.9
Jefferson	1,741,708	2.2	37,492,399	2.1	3,482,377	2.1	40,974,776	2.1
Nueces	1,504,203	1.9	37,766,785	2.2	3,510,928	2.1	41,277,713	2.2
TOTALS	46,788,621	59.1	1,040,347,400	59.4	95,820,385	57.2	1,136,167,785	59.3
STATE TOTALS	79,168,566		1,747,622,605		167,424,585		1,915,047,190	

TABLE 3 : Fiscal 1972 Eight County Revenue and Percents of Seven Selected State Taxes

County	Ad Valorem Tax	%	Limited Sales Tax	%	Est. Cig. Sales Tax	%	Motor Veh. Reg. Fees	%	Est. Motor Fuels Tax	%
Anderson	\$154,222	.249	\$ 1,485,282	.1680	\$ 399,534	.172	\$ 346,457	.21	\$ 830,172	.255
Dickens	26,157	.042	121,779	.014	65,040	.028	14,777	.009	123,712	.038
Hardin	273,860	.441	712,305	.081	527,291	.227	305,963	.185	846,450	.260
Hidalgo	573,548	.925	10,358,415	1.17	1,976,762	.851	2,550,507	1.55	4,036,916	1.24
Lee	30,353	.049	438,219	.05	134,726	.058	44,025	.027	237,657	.073
Reeves	265,294	.428	752,645	.085	232,287	.100	109,726	.066	393,925	.121
Smith	343,434	.554	7,273,181	.823	1,930,304	.831	1,561,616	.947	2,933,275	.901
Victoria	351,569	.567	4,102,335	.464	961,668	.414	789,113	.478	1,543,144	.474
TOTALS	2,018,437	3.26	25,244,161	2.86	6,227,612	2.68	5,722,184	3.5	10,945,251	3.362

County	Est. Alcoholic Bev. Tax	%	Total Est. Tax	%	Motor Veh. Sales Tax	%	Total All Taxes	%
Anderson	\$ 136,170	.172	\$ 3,351,837	.192	\$ 391,405	.233	\$ 3,743,242	.195
Dickens	22,167	.028	373,632	.021	49,589	.030	423,221	.022
Hardin	179,713	.227	2,845,582	.163	414,736	.248	3,260,318	.170
Hidalgo	673,724	.851	20,169,872	1.15	1,910,375	1.14	22,080,247	1.15
Lee	45,918	.058	930,898	.053	90,633	.054	1,021,531	.053
Reeves	79,168	.100	1,833,045	.105	158,962	.095	1,992,007	.104
Smith	657,891	.831	14,699,701	.841	1,422,380	.850	16,122,081	.842
Victoria	327,758	.414	8,075,587	.462	844,463	.504	8,920,050	.466
TOTALS	2,122,509	2.68	52,280,154	2.99	5,282,543	3.16	57,562,697	3.01

TABLE 4 : 1970 and 1972 Eight County Est. Per Capita Contribution to Seven Selected Taxes

County	Ad Valorem		Limited Sales Tax		Cig. Sales Tax		Motor Vehicle Reg. Fees	
	1970	1972	1970	1972	1970	1972	1970	1972
Harris	\$5.99	\$6.00	\$73.77	\$110.16	\$18.61	\$23.99	\$14.99	\$15.84
Dallas	5.19	5.05	73.31	107.81	20.24	25.66	17.11	17.56
Tarrant	3.85	3.35	51.53	76.10	17.37	22.68	15.59	16.14
Bexar	2.37	2.22	41.53	68.95	14.38	18.27	12.05	12.79
El Paso	2.65	2.65	39.19	63.63	13.84	16.23	11.25	12.36
Jefferson	6.77	5.44	48.99	75.93	16.53	20.54	13.54	14.25
Nueces	6.38	6.22	61.83	80.34	14.28	17.74	14.06	15.28
Travis	4.55	3.97	49.51	81.52	17.19	20.73	13.20	13.98
8 Largest County Total	4.78	4.58	61.29	92.55	17.58	22.36	14.71	15.44
Rest of State	6.58	6.03	36.28	56.22	14.11	16.94	11.19	12.51
	Motor Fuels Tax		Alcoholic Bev. Tax		Motor Vehicle Sales Tax		Seven Tax Total	
	1970	1972	1970	1972	1970	1972	1970*	1972
Harris	\$26.71	\$27.38	\$6.04	\$8.18		\$17.05	\$146.10	\$208.59
Dallas	28.96	28.18	6.57	8.75		17.40	151.38	210.42
Tarrant	29.17	28.78	5.63	7.73		15.12	123.15	169.91
Bexar	22.86	24.12	4.66	6.23		12.64	97.86	145.22
El Paso	22.49	23.62	4.49	5.53		11.64	93.91	135.66
Jefferson	26.29	27.48	5.36	7.00		14.00	117.48	164.69
Nueces	25.97	26.17	4.63	6.04		14.11	127.22	165.91
Travis	24.41	25.18	5.58	7.07		15.45	114.44	167.91
8 Largest County Total	26.55	26.88	5.70	7.62	9.22	15.60	130.61	185.03
Rest of State	29.32	28.62	4.58	5.77	8.01	12.77	110.27	138.87

*1970 total is six taxes.

TABLE 5 : 1970 and 1972 Eight Randomly Selected Counties Estimated Per Capita Tax Contributions

County	Ad Valorem Tax		Est. Sales Tax		Est. Cig. Tax		Motor Vehicle Reg. Fees	
	1970	1972	1970	1972	1970	1972	1970	1972
Anderson	\$6.40	\$5.30	\$34.84	\$50.11	\$14.60	\$13.73	\$10.36	\$11.90
Dickens	8.81	7.47	25.02	34.79	13.81	18.58	3.44	4.22
Hardin	6.15	9.07	21.09	23.59	13.88	17.46	8.22	10.13
Hidalgo	3.28	3.14	34.36	56.73	8.51	10.82	12.89	13.97
Lee	4.06	3.37	15.72	48.69	11.28	14.97	4.34	4.89
Reeves	14.06	15.07	35.28	42.76	13.03	13.20	5.98	6.23
Smith	3.98	3.38	47.64	71.52	15.60	18.98	14.07	15.36
Victoria	5.77	6.10	46.34	71.22	14.47	16.70	12.48	13.70
Eight County Total	5.67	4.68	37.66	58.53	11.99	14.44	12.09	13.27

	Motor Fuels Tax		Alcoholic Bev. Tax		Motor Vehicle Sales Tax		Seven Tax Total	
	1970	1972	1970	1972	1970	1972	1970*	1972
Anderson	\$30.48	\$28.53	\$4.74	\$4.70		\$13.45	\$100.99	\$128.63
Dickens	34.18	35.35	4.48	6.33		14.17	89.74	120.92
Hardin	27.47	28.03	4.50	5.95		13.73	81.32	107.96
Hidalgo	22.76	22.11	2.76	3.69		10.46	84.56	120.92
Lee	29.67	26.41	3.66	5.10		10.07	68.73	113.50
Reeves	26.12	22.38	4.23	4.50		9.03	98.71	113.18
Smith	29.02	28.84	5.06	6.47		13.99	115.37	158.52
Victoria	27.15	26.79	4.69	5.69		14.66	110.90	154.86
Eight County Total	25.96	25.38	3.89	4.92	96.25	12.25	96.25	133.46

*1970 total is six tax.

TABLE 6: Ad Valorem Tax Comparison 1963, 1970 and 1972

Item	1963	%	1970	%	Change 1963-1970	Change %	1972	%	Change 1970-1972	Change %
State Collections	\$44,322,679		\$64,482,454		\$20,161,775	45.5	\$62,000,265		\$-2,482,189	-3.8
8 Urban Counties	17,592,526	39.7	27,538,569	42.7	9,946,043	56.5	28,152,763	45.4	614,194	2.2
Rest of State	26,730,153	60.3	36,943,885	57.3	10,213,732	38.2	33,847,502	54.6	-3,096,383	-8.4
State Per Capita	\$7.68		\$5.76		-\$1.92	-25	\$5.28		-\$0.48	-8.3
8 Urban Counties	3.63		4.79		1.16	32	4.58		- 0.21	-4.4
Rest of State	5.09		6.79		1.70	33.4	6.03		- 0.76	-11.2
	Sq. Mile Land Area	1963 Tax Mi.	1970 Tax Per Sq. Mi.		Change 1963-1970	Change %	1972 Tax Per Sq.Mi.		Change 1970-1972	Change %
State Land Area	275,416	\$ 160.93	\$ 234.13		\$ 73.20		\$ 225.12		-\$ 9.01	
8 Urban Counties Land Area	8,629	\$2038.77	\$3191.40		\$1152.63		\$3262.58		\$71.18	
Rest of State Land Area	266,787	\$ 100.19	\$ 138.48		38.29		126.87		-\$11.61	

TABLE 7: Estimated Limited Sales Tax Data For Fiscal 1963, 1970 and 1972

Item	1963	%	1970	%	Change 1963-1970	Change %	1972	%	Change 1970-1972	Change %
State Tax	\$180,488,862		\$550,062,227		\$369,573,365		\$883,651,639		\$333,589,412	60.6
8 Urban Counties	106,668,917	59.1	352,589,887	64.1	245,920,970	231	568,303,972	64.3	215,714,085	61.2
Rest of State	73,819,945	40.9	197,472,340	35.9	123,652,395	168	315,347,666	35.7	117,875,326	59.7
State Tax Per Capita	\$ 17.93		\$ 49.13		\$ 31.20		\$ 75.61		\$ 44.41	
8 Urban Counties Per Capita	22.15		61.29		39.14		92.55		53.41	
Rest of State Per Capita	14.06		36.28		22.22		56.22		34.00	

TABLE 8 : Motor Vehicle Sales Tax Data for Fiscal 1971, 1970 and 1972

Item	1961	%	1970	%	Change 1961-1970	Change %	1972	%	Change 1970-1972	Change %
State Tax	\$25,273,477		\$96,629,075		\$71,355,598	282	\$167,424,585		\$70,795,510	73
8 Urban Counties	12,335,842	48.8	53,035,115	54.9	40,699,273	330	95,820,385	57.2	42,785,270	81
Rest of State	12,937,635	51.2	43,593,960	45.1	30,656,325	237	71,604,200	42.8	28,010,240	64
State Tax Per Capita	\$ 2.59		\$ 8.63		\$ 6.04		\$ 14.25		\$ 5.62	
8 Urban Counties	2.71		9.22		6.51		15.60		6.38	
Rest of State	2.48		8.01		5.52		12.77		4.76	

TABLE 9 : Motor Vehicle Registration Fees

Item	1963	%	1970	%	Change 1963-1970	Change %	1972	%	Change 1970-1972	Change %
State Tax	\$88,719,671		\$145,534,966		\$56,815,295	64	\$164,957,456		\$19,422,490	13.3
8 Urban Counties	51,188,575	57.7	84,607,162	58.1	33,418,587	65.1	94,808,054	57.5	10,200,892	12
Rest of State	37,531,096	42.3	60,927,803	41.9	23,396,707	62.3	70,149,402	42.5	9,221,599	15.1
State Per Capita	\$ 8.81		\$ 13.00		\$ 4.19		\$ 14.04		\$ 1.04	
8 Urban Counties Per Capita	10.63		14.71		4.08		15.44		0.73	
Rest of State Per Capita	7.15		11.19		4.04		12.51		1.32	

TABLE 10: Estimated Highway Motor Fuels Tax

	1963	%	1970	%	Change 1963-1970	% Change	1972	%	Change 1970-1972	% Change
STATE TOTAL	\$206,307,149		\$312,349,252		\$106,042,103	51.4	\$325,557,752		\$13,208,500	4.2
8 Urban Counties	92,301,195	44.7	152,740,818	48.9	60,439,623	65.5	165,057,778	50.7	12,316,960	8.1
Rest of State	114,005,954	55.3	159,608,434	51.1	45,602,480	40.0	160,499,974	49.3	891,540	0.6
STATE TAX										
Per Capita	\$20.50		\$27.80				\$27.71			
8 Urban Counties Per Capita	19.17		26.55				26.88			
Rest of State Per Capita	21.72		29.32				28.62			

TABLE 11: Estimated Cigarette and Tobacco Tax

Item	1963	%	1970	%	Change 1963-1970	Change %	1972	%	Change 1970-1972	Change %
State Tax	\$90,354,114		\$177,971,764		\$87,617,650	97	\$232,286,927		\$54,315,163	30.5
8 Urban Counties	49,242,992	54.5	101,155,376	56.8	51,912,384	105.4	137,281,574	59.1	36,126,198	35.7
Rest of State	41,111,122	45.5	76,816,388	43.2	35,705,266	86.9	95,005,353	40.9	18,188,965	23.7
State Per Capita	\$ 8.98		\$ 15.89		\$ 6.91		\$ 19.77		\$ 3.88	
8 Urban Counties Per Capita	10.23		17.58		7.35		22.36		4.78	
Rest of State Per Capita	7.83		14.11		6.28		16.94		2.83	

TABLE 11: Estimated Alcoholic Beverage Taxes

Item	1963	%	1970	%	Change 1963-1970	Change %	1972	%	Change 1970-1972	Change %
State Tax	\$41,186,562		\$57,732,109		\$16,543,547	40.2	\$79,168,566		\$21,436,457	37.1
8 Urban Counties	22,446,676	54.5	32,813,707	56.8	10,367,031	46.2	46,788,621	59.1	13,974,914	42.6
Rest of State	18,739,886	45.5	24,918,402	43.2	6,178,516	33.0	32,379,945	40.9	7,461,543	29.9
State Per Capita	\$ 4.09		\$ 5.16		\$ 1.07		\$ 6.74		\$ 1.58	
8 Urban Counties Per Capita	4.66		5.70		1.04		7.62		1.92	
Rest of State Per Capita	3.57		4.58		1.01		5.77		1.19	

TABLE 12: Taxes Per \$100 of "Effective Buying Income"

Area	Seven Tax Total		Taxes Per \$100 "EBI"	
	1970	1972	1970	1972
State (All Counties)	\$1,404,761,847	\$1,915,047,190	\$4.09	\$4.74
Eight County Total	804,480,642	1,136,167,785	4.13	4.75
Rest of State Total	600,281,205	778,879,405	4.05	4.72

TABLE 13: Expenditures in Texas Counties by Texas Education Agency 1965-66, 1969-70 and 1971-72

County	ADA	1965-66		
		Expenditures		
		Amount	Per ADA	
State (all Counties)	2,236,390	\$626,678,166	\$280.22	'Rest of State'
Harris	313,891	73,568,059	234.37	State Aid Per ADA
Dallas	226,352	48,366,578	213.68	
Bexar	154,252	41,085,502	266.35	
Tarrant	128,568	32,516,554	252.91	'8 County Total'
El Paso	82,705	22,747,436	275.04	State Aid Per ADA
Travis	43,740	12,806,762	292.79	
Jefferson	52,807	11,776,202	223.00	
Nueces	55,565	15,923,814	286.58	Equals
8 County Total	1,057,880	258,790,907	244.63	<u>1.28</u>
Rest of State	1,178,510	367,887,259	312.16	1
County	ADA	1969-70		
		Expenditures		
		Amount	Per ADA	
State (all counties)	2,431,904	\$824,729,795	\$339.13	'Rest of State'
Harris	364,642	102,995,758	282.46	State Aid Per ADA
Dallas	267,065	69,802,169	261.37	
Bexar	174,779	59,274,599	339.14	
Tarrant	151,230	45,722,563	302.34	'8 County Total'
El Paso	91,240	30,696,203	336.43	State Aid Per ADA
Travis	55,791	19,832,499	355.48	
Jefferson	53,808	15,439,210	286.93	
Nueces	58,360	20,663,128	354.06	Equals
8 County Total	1,216,915	364,426,129	299.47	<u>1.27</u>
Rest of State	1,214,989	460,303,666	378.85	1
County	ADA	1971-72		
		Expenditures		
		Amount	Per ADA	
State (all counties)	2,488,021	\$1,726,974,734	\$694.12	'Rest of State'
Harris	374,120	264,359,565	706.62	State Aid Per ADA
Dallas	270,203	189,815,780	702.49	
Bexar	183,044	113,594,264	620.58	
Tarrant	151,486	98,502,784	650.24	'8 County Total'
El Paso	96,270	58,443,663	607.08	State Aid Per ADA
Travis	57,089	40,329,185	706.43	
Jefferson	51,281	39,968,541	779.40	
Nueces	59,286	38,263,424	645.40	Equals
8 County Total	1,242,779	834,277,206	671.30	<u>1.07</u>
Rest of State	1,245,242	892,697,528	716.89	1

TABLE 14: Texas Highway Department Expenditures for Highways, 1972

	Expenditure	
STATE TOTAL	\$348,156,760	
Bexar	8,681,152	
Dallas	21,275,228	
El Paso	4,247,875	
Harris	24,067,096	
Jefferson	5,326,132	
Nueces	5,326,086	
Tarrant	15,458,044	
Travis	8,702,006	
TOTAL	\$ 93,083,619	26.7%*

* This figure represents the portion of Total State Highway Department Expenditures for the 8 urban counties.